DOCUMENT RESUME

ED 109 825 88 EA 007 413

AUTHOR	Call, Michael, Comp.
TITLE	Teacher Made Games: An Adopter's Guide Referenced in Promising Practices in Oregon Education.
INSTITUTION	Oregon State Dept. of Education, Salem.
SPONS AGENCY	Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C.
PUB DATE	75
NOTE	92p.
AVAILABLE FROM	DCE Publications, 1633 S.W. Park Avenue, Portland, Oregon 97207 ($2.00)
EDRS PRICE	MF-$0.76 HC-$4.43 PLUS POSTAGE
DESCRIPTORS	Bibliographies; *Classroom Games; *Educational Games; Elementary Education; *Instructional Aids; *Instructional Innovation; Learning Activities; Mathematics Materials; Reading Games; *Teacher Developed Materials
IDENTIFIERS	Elementary Secondary Education Act Title III; ESEA Title III; Oregon

ABSTRACT

This booklet describes approximately 30 instructional games submitted by Oregon teachers and teacher resource centers. The games are organized in two major sections--one for reading games and one for mathematics games. Within each section, games are grouped according to the similarity of their format; for example, all "road race" games are listed together. Those games with a unique format are listed at the end of each section. Each entry lists the game title and the number of players recommended by the person who submitted the game. Materials for constructing each game are given along with the instructions for play. Rule variations and different techniques for maintaining player interest or altering the level of difficulty are also suggested. A bibliography, which lists readings on the use of instructional games and resource guides that describe games and similar activities, is also included. (Author/JG)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

OREGON DEPARTMENT
OF EDUCATION

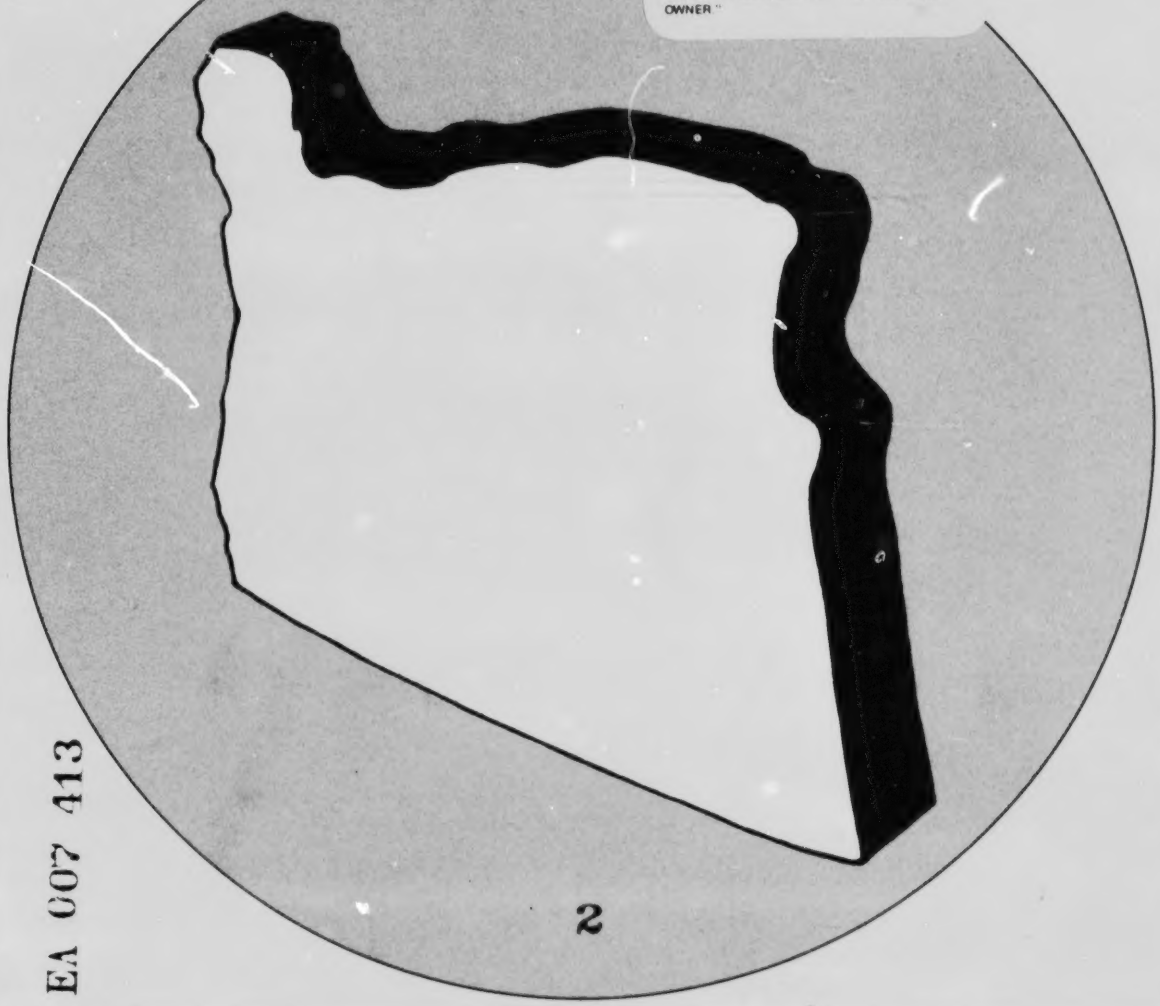
TEACHER MADE GAMES

VERNE A. DUNCAN,
SUPERINTENDENT
OF PUBLIC INSTRUCTION

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRO
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIGIN
ATING IT POINTS OF VIEW OR OPINIONS
STATED DO NOT NECESSARILY REPRE
SENT OFFICIAL NATIONAL INSTITUTE OF
EDUCATION POSITION OR POLICY

AN ADOPTER'S GUIDE REFERENCED IN PROMISING PRACTICES IN OREGON EDUCATION

"PERMISSION TO REPRODUCE THIS COPY-
RIGHTED MATERIAL HAS BEEN GRANTED BY
Oregon Department of Education
TO ERIC AND ORGANIZATIONS OPERATING
UNDER AGREEMENTS WITH THE NATIONAL IN-
STITUTE OF EDUCATION FURTHER REPRO-
DUCTION OUTSIDE THE ERIC SYSTEM RE-
QUIRES PERMISSION OF THE COPYRIGHT
OWNER"



EA 007 413

TEACHER MADE GAMES

This collection of instructional games is based on samples submitted by Oregon teachers and teacher resource centers. Funds and staff to compile this document were provided by the Oregon Department of Education and Title III of the Elementary and Secondary Education Act.

Oregon Department of Education
942 Lancaster Drive NE
Salem, Oregon 97310

Verne A. Duncan
Superintendent of
Public Instruction

Mary Hall
Assistant Superintendent
Program Management Support

Jack Allen
Director
Exemplary Programs

Compiled by:
Michael Call
Editor
Communications and Government Relations

Copyright © 1975, by the Oregon Department of Education
1200197570122

First Printing, April 1975
Second Printing, May 1975

Granting that childhood is playhood, how do we adults generally react to this fact? We ignore it, we forget all about it--because play, to us, is a waste of time. Hence we erect a large ... school with many rooms and expensive apparatus for teaching; but more often than not, all we offer to the play instinct is a small concrete space.

A. S. Neill

Summerhill

5

FOREWORD

Although schools and communities share many of the same kinds of educational problems and needs, they too often fail to share information about how to meet these needs and solve these problems. If a successful approach to a set of needs or the solution to a problem in one community is thoroughly documented, it may serve as a model for adoption or adaptation elsewhere. Thus, communication about promising practices is at least as important as their development.

To promote such communication, the Oregon Department of Education is involving school personnel throughout the state in the identification of instructional or management techniques they believe to be innovative, effective, and transportable. Brief descriptions of these techniques, or programs, are compiled in a catalog of *Promising Practices in Oregon Education*. Districts whose innovative practices are described in the catalog have agreed to share more detailed information about their procedures with those who request it, and in many cases the Department will encourage and even underwrite the development of published guides designed to give practical step-by-step directions to potential adopters.

Teacher Made Games documents a promising practice in Oregon schools--the classroom use of games. It describes educational games used in several different school districts to help students practice reading and math skills.

Your comments and suggestions will help us to improve future editions of this collection. An evaluation form is included for your convenience.

Verne A. Duncan
Superintendent of
Public Instruction

ACKNOWLEDGMENTS

Many people involved in compiling and publishing this catalog deserve recognition for their contributions to the final product. Those who helped with collecting the games are: Glen Davidson, IMC Director, Corvallis Schools; John Heilbroner of the Oregon Association of Classroom Teachers; and Jay Greenwood, Mathematics Specialist with the Multnomah Intermediate Education District.

Also, a word of thanks goes to Chuck Barker, Manzanita Project, Josephine County Schools, and Marvel Lamb in the Special Education Department at Oregon College of Education, for taking the time to review the copy and suggest improvements.

Finally, for sharing the games listed here with Oregon teachers, special recognition goes to the contributors:

Donna L. Embree
Frances Willard Elementary School
Eugene, Oregon

Georgana Harrison
Warrenton Elementary School
Warrenton, Oregon

Jessie Holsinger
Fort Vanoy Elementary School
Grants Pass, Oregon

Elizabeth Kurtz
Adams Elementary School
Eugene, Oregon

Ellamae Lenox
Lebanon Junior High School
Lebanon, Oregon

Linda Milne
Harbor Lights Junior High School
Bandon, Oregon

Bob Mittleider
Math Resource Center
Corvallis School District
Corvallis, Oregon

Darlene Mullin
McKinley Elementary School
Salem, Oregon

Kathy Reed
Rockwood Elementary School
Portland, Oregon

Dr. Oscar Schaff
Math Center
Eugene School District
Eugene, Oregon

Genevee Terbell
District Resource Center
Salem School District
Salem, Oregon

TABLE OF CONTENTS

	Page
Preface	v
Acknowledgments	vii
Introduction	1
Reading Games	9
Race Games	11
Checkerboard Games	31
Games with Other Formats	39
Mathematics Games	45
Race Games	47
Card Games	57
Checkerboard Games	69
Games with Other Formats	81
Appendix - List of Games by Level	89
Bibliography	94
Research	95
Resources	97
Index	101

6A

Teacher Made Games

YOUR VIEWS ARE IMPORTANT! After you read and examine this publication, please forward your comments to the publications staff of the Oregon Department of Education. Call us at 378-4776 or, use this response form.

PLEASE RESPOND so that your views can be considered as we plan future publications. Simply cut out the form, fold and mail it back to us. We want to hear from you!

Did you read this publication?

___ Completely
___ More than half
___ Less than half
___ Just skimmed

Does this publication fulfill its purpose as stated in the preface or introduction?

___ Completely
___ Partly
___ Not at all

Did you find this publication useful in your work?

___ Often
___ Sometimes
___ Seldom
___ Never

What type of work do you do?

___ Classroom teacher
___ Consultant to classroom teachers
___ School administrator
___ Other

Would you recommend this publication to a colleague?

___ Yes, without reservations
___ Yes, with reservations
___ No
___ Other _____

Did you find the content to be stated clearly and accurately?

___ Always yes
___ In general, yes
___ In general, no
___ Always no
___ Other _____

Were the contents presented in a convenient format?

___ Very easy to use
___ Fairly easy
___ Fairly difficult
___ Very difficult
___ Other _____

Did you find this publication to be free of discrimination or biased content towards racial, ethnic, cultural and religious groups, or in terms of sex stereotyping?

___ Yes, without reservations
___ Yes, with reservations
___ No
___ Other _____

What is your impression of the overall appearance of the publication (graphic art, style, type, etc.)?

___ Excellent
___ Good
___ Fair
___ Poor

When this publication is revised, what changes would you like to see made?

Additional comments. (Attach a sheet if you wish.)

Thanks!

Fold here and staple

Postage Will Be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 100, SEC. 510, P. L. & R. SALEM, OREGON

Communications and Government Relations
Oregon Department of Education
942 Lancaster Drive NE
Salem, Oregon 97310

Fold here and staple

INTRODUCTION

Games can help engage students in repetitive classroom exercises.

Though they have long occupied our leisure hours, in the classroom games have not generally been popular until the early 1960s. Since, both varieties and uses of games have markedly increased.

Teacher-Made Games seeks to share some games teachers are using for drills in reading and arithmetic. It is not a comprehensive index; rather, it is a sampling of what is available in the schools and on the commercial market.

A Definition

One definition of a game is "any contest (play) among adversaries (players) who operate with certain constraints (rules) to attain a predetermined objective (winning)."[1] Educational games are those which help players reach desired educational goals. Such games fall into three groups: 1) *instructional*--those presenting knowledge or information; 2) *simulation*--those using role-playing to operate a model process representing reality; and 3) *drill*--those requiring players to repeat an exercise.

Research and Games

Many educators still question the effectiveness of games as a classroom teaching technique. Traditional reasoning holds that learning is the work of students; if students are playing games they are not working and, therefore, not learning. But traditional reasoning does not take into account results of current research on the learning process and the role of games as a motivational technique. Learning does not have to be drudgery. According to some

---

[1] See Dwayne C. Poll, "Gaming in the Language Arts," Elementary English, L, 4, (April 1973), 535 ff.

theoreticians, play is a primary mechanism by which children learn about their world.[2]

Jean Piaget, Professor of Psychology at the University of Geneva, suggests play is necessary for a child's maturation. He believes games and similar play activities affect the intellectual development of the child. According to his classification system, the child experiences three types of games: 1) practice games, essentially sensory motor exercises of the very young; 2) symbolic games, make-believe activities; and 3) games with rules, emerging at ages 4 to 7.[3] Games with rules are characteristic of the socialized being and represent a child's effort to imitate a social environment which operates by a certain code of behavior.

In addition to the theoretical justification for the use of games, experimental evidence also supports their use.

The Academic Games Program at the Johns Hopkins University Center for Social Organization of Schools has compiled a considerable body of literature on the validity of games as instructional tools. In one study by the program, the investigators concluded that students showed a marked increase in favorable responses when they used *Giant Steps*, an original language-development game designed to teach the use of synonymous verbs.[4] Another research effort using the commercially available mathematics game, *Equations*, revealed that the game produced "greater learning of math skills than a traditionally taught

---

[2]For example, see Brian Sutton-Smith, "The Role of Play in Cognitive Development" in Robin Herron and Brian Sutton-Smith, eds. Child's Play (New York: John Wiley and Sons, Inc., 1971), pp. 252-260; also see Bruno Bettleheim, "What Children Learn from Play," Parents Magazine (July 1964), 48 ff.

[3]Jean Piaget, Play, Dreams and Imitation in Childhood (New York: W. W. Norton and Company, 1962), pp. 110-113.

[4]Doris R. Entwisle and others, Giant Steps: A Game to Enhance Semantic Development of Verbs (Baltimore: Center for Social Organization of Schools, the Johns Hopkins University, 1970). ED 042 595.

unit."[5] Overall, the program's studies suggest that games "produce superior student performance on those specific skills that the students must use in playing the games."[6]

In some studies, this finding is generalized to related skills.[7] Other studies suggest that games are no more effective than other teaching methods.[8] But even reports not recognizing classroom games as a "superior" teaching method acknowledge their motivational capabilities and student preference for games over other classroom activities.[9]

Rationale

National test scores indicate that student performance may be declining in certain basic skill areas such as reading and mathematics. Teachers frequently point out that these skills traditionally were learned by memorization or repetitive "drill." Students today resist these instructional approaches.

In discussing this problem with Oregon educators, the Department of Education found that many teachers advocated using "games" as a challenging and interesting medium for repetitive instruction. It was also found that some Oregon teachers had become highly creative in the design and use of such games, and that other teachers throughout the state could easily duplicate the materials to play them. The need for a document describing some of the most innovative of these games became apparent and is why this book was prepared.

---

[5] Samuel A. Livingston, The Academic Games & Program: A Summary of Research Results, 1967-72. (Baltimore: Center for Social Organization of Schools, the Johns Hopkins University, 1972), p. 2. ED 072 393.

[6] James S. Coleman, "The Hopkins Games Program: Conclusions from Seven Years of Research" in Educational Researcher (August 1973), p. 6.

[7] Ibid.

[8] Albert H. Fink and others, The Effects of Games on Motivational Aspects of Teacher-Pupil Interaction, Final Report 20.3 (Bloomington, IN: Center for Innovation in Teaching the Handicapped, Indiana University, 1971), p. 79. ED 068 078.

[9] Ibid., p. 84.

Games in Oregon

Following the national trend, classroom games in Oregon have increased in popularity. The development of resource centers and laboratories for reading and mathematics encouraged the use of games and manipulative materials, such as dominoes, wooden blocks and abacuses, to supplement the classroom routine. Three centers which collect and make games available to the teachers in their districts are the Eugene Math Center for the Eugene Schools, the Corvallis Math Resource Center for the Corvallis Schools, and the District Resource Center for the Salem Schools. The Salem Center includes mathematics and reading games in its collection and enlists volunteers to reproduce the materials for teachers.

Two other groups are promoting classroom games in the state. Schools of education and individuals who recognize the value of games in the classroom are conducting teacher workshops on the development and use of classroom games. Meanwhile the Oregon Council of Teachers of Mathematics is giving impetus to games through its monthly publication, the Math Enthusiast. Each issue features suggestions for games and similar activities submitted by teachers from around the state.

Data Collection

To collect the games for this guide, the Department of Education enlisted the aid of individuals and organizations, among them the Oregon Association of Classroom Teachers and the three resource centers mentioned above. The entries for this guide were assembled from information forms and visits to the resource centers.

To be included each game had to: 1) focus on reading or mathematics; 2) be drill-oriented (as opposed to a simulation activity); 3) be noncommercial, teacher-made or adapted by a teacher for classroom use; and 4) be transportable (materials for making the game are readily available to anyone who wants to try it).

Emphasis was also given to evidence of the games' effectiveness. It soon became apparent, however, that little or no evaluation of drill-oriented classroom games is being conducted by teachers. Many teachers use these games in conjunction with weekly or daily tests; but wherever this occurs, the

sample is small and the procedures informal. For this collection effort, the evaluation rests with the teachers' assurance that the student response to the game was favorable.

Results of the questionnaire also revealed that gaming in reading and mathematics occurs primarily from kindergarten through grade six; therefore, though no restrictions were placed on the level of entries during data collection, most of the games are suited for the primary and intermediate grades. Games inventoried here, however, can also be used at the junior and senior high school level by altering their content slightly.

In addition to the criteria used during collection, a few other characteristics appear to contribute to the success and usefulness of an educationally sound drill-oriented game. Teachers may, for example, wish to consider some of the following thoughts when selecting a gaming activity for their students:

Skill Mastery and Risk--An element of risk can raise interest level in a game. Chance can be added by including bonus and penalty spaces on board games. Yet, risks of the game should not become so great that certain skills become unimportant. For example, student success in a multiplication game should be determined mainly by ability to multiply numbers.

Physical Involvement of Players--Student physical involvement in a game is important for maintaining interest. Most games in this guide require players to move markers, spin spinners or handle cards. One even suggests that players move their whole body from place to place as they progress through the game.

Quiet--While the noise level during a game may not affect players' learning, it may impair the learning of those students engaged in other tasks. Many entries in Games can be played without extreme noise; others, as those requiring dice, can be played with reduced noise using techniques suggested under "Game Materials" (see page 6).

Simple Rules--Game rules should be simple enough to learn quickly; yet they should not be so simple that the game cannot hold a player's interest.

Relative--Use of a game should be integrated with the study of a subject. The game should relate to the subject, not just be something to take up spare minutes.

Self-correcting--By design self-correcting games provide the right answer when a student answers incorrectly, thus eliminating the need for the teacher or a tutor to supervise the players. (Not all games can be self-correcting, and at times teacher involvement in the game-playing process is desirable.)

Competition

While the games in this volume include a competitive factor which allows one person to "win" and all others to "lose," most of them can be played for the fun of the activity alone. To remove the competitive factor, simply change the rules. It should be possible for each player to encourage the others to finish the game for the pleasant experience of accomplishment.

Game Materials

A number of ideas for game materials which teachers may want to use when making or adapting a game for classroom use are included in the suggestions given below. Success of the game is not sure, but such suggestions may make the game easier to store, more flexible for players of different abilities or more suitable for classroom use. (Consult the bibliography herein for other recommendations and examples.)

Number Cubes--When a game calls for dice or number cubes, make them out of foam rubber. In a busy classroom, foam cubes are quieter and less distracting to students not participating in the game. Foam can be cut to any size, and teachers can apply their own designs with felt markers.

Spinners--An alternative to the traditional spinner with a dial and a needle is the type used by the Eugene Math Center. Cut the spinner dial from tagboard in the shape of a pentagon or hexagon depending on the number of divisions required. Insert a short dowel in the middle of the dial so the spinner resembles a top. When spun, the spinner always lands on one side of the polygon and eliminates confusion.

Game Boards--To save space, game boards can be drawn on a piece of standard typing paper and then used as a master to make copies for other teachers or mounted on railroad board or masonite. A path of about 40 spaces can be squeezed onto one sheet of paper by using a concentric maze pattern. Cover the paper or the board surface with clear vinyl to extend the life of the game.

Flexible Game Boards--For games using larger boards, print the numbers or instructions on small cards and insert them in slits in each space. Use the board for more than one game or raise the level of difficulty for the advanced players by changing the cards. Number the backs of the cards to keep them in order and note the name of the game on each one.

Instructions--Keep the instructions with the game by attaching them to the front of the game board. Directions attached to the bottom side of a playing board are difficult to read once the game begins and players' markers are in place.

To make the items listed here or others, select safe and nontoxic materials. Paint or other colored substances applied to game boards or dice should be labeled "nontoxic" or "lead free." Place-markers and spinners, especially the "top" spinner, should not have sharp points. Though few games require wooden parts, be sure that wooden games are free from splinters. Vinyl-coated playing cards and game boards are easy to clean.

Content of the Book

The games which follow are organized first by subject--reading or mathematics--and then grouped according to the similarity of their format. Thus all the reading games are in the first section and the mathematics games in the second. Card games for mathematics are in one group and those using a "road race" format are in another. Games with a unique format are located at the end of each topic section.

Each entry provides the title and recommended number of players as given by the person who submitted it. Materials for constructing the game are given along with instructions. Suggestions for materials mentioned above are repeated in many cases. The procedures for playing each game follow as closely as

possible those submitted with the game. Occasionally rules were rewritten for clarity, hopefully without violating the integrity of the game or its objective. Variations suggest other ways of playing the game, or techniques for maintaining player interest or altering the level of difficulty. The last item for each entry provides the name of the person or center submitting the game.

The Bibliography lists additional readings on the use and value of games and includes resource guides which describe games and similar activities for the teacher. ERIC numbers are noted for those documents available on microfiche. Prices and publishers' addresses are given to assist acquisition should the reader wish to do so.

READING GAMES

RACE GAMES

Each game in this section uses a game board with a starting point, a finish point and a series of steps in between. Players race along a track or path from start to finish, reading words to determine how far and how fast they move.

BIG EGG GAME

Objective	To teach short "e" sound
Level	1-3
Players	2-4
Materials	Game board with a path of 80-90 spaces. In each space a word using the short "e" sound is written (e.g., hen, nest, well, jet, egg, west, get, den, tell, ever, better). Each word should be used in at least two spaces. Number cube or spinner. Place-marker for each player. Paper and Pencil for each player. Set of 30 "Special Instructions" cards. Each card is a direction for the player (e.g., "Miss One Turn," "Move Ahead One Space," "Move Back to Word Beginning with Letter 'W'").
Procedure	Each player rolls the cube and moves his marker to the appropriate space. The player pronounces the word and writes it on his paper. If the player has the same word written twice on his paper, he may move ahead six places. If the player rolls a 3 or a 6 he must take one of the Special Instruction cards and do what it says. First player to the finish is the winner.
Variations	Substitute words using other sounds. This game is similar to other "Road Race" games. The use of the Special Instruction cards adds an element of chance.
Submitted by	Genevee Terbell District Resource Center Salem School District Salem, Oregon

FIND THE DIAMOND MINE

Objective

To teach the long "i" sound

Level

1-3

Players

2-4

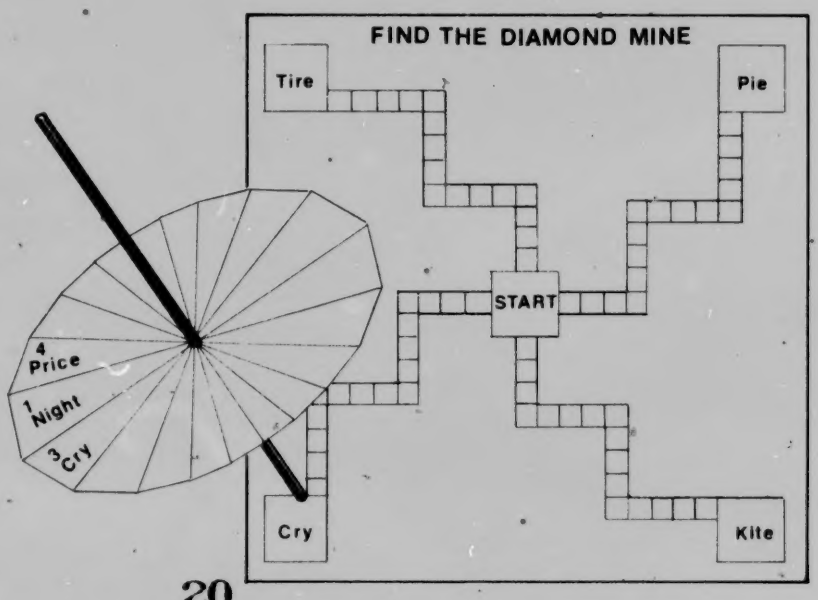
Materials

A game board on which is drawn four separate paths, each one beginning from the same square in the middle of the board. This square is labeled "Start." At the end of each path is another space in which one of four corner cards is inserted.

Four "corner" cards, one of which says "Diamond Mine."

A large spinner divided into twenty wedges of equal size. On each wedge print a word which contains the long "i" sound (e.g., bride, kite, price, night, stripe, tire, white, spy). Put a number from 1 to 4 in each wedge as well.

Place-markers for each player.



20

Procedure	To begin the game, the four corner cards are shuffled face down. One card is placed at the end of each path. To begin the game, each player places his marker in the center square labeled "Start." The first player spins the spinner and reads the word indicated when it stops. If he can read the word, he can move the number of spaces shown in the wedge, moving his marker along any one of the four paths. If the player cannot read the word, play passes to the next person. When a player gets to the end of a path, he turns over the corner card. If it says "Diamond Mine," he wins; if it is blank, the player goes back to start and begins a different path.
Variations	The words on the spinner can be replaced by other sounds or arithmetic problems.
Submitted by	Elizabeth Kurtz Adams Elementary School Eugene, Oregon

HOP THE ROCKS TO THE MONSTER'S POND

Objective

To practice reading short "o" sound

Level

1-3

Players

2-4

Materials

About 30 large cutouts (at least 12" x 12") in the shape of rocks. Use construction paper or newsprint if the game will not often be reused. On each cutout print a word using the short "o" sound (e.g., cot, fog, gob, knot, prop, wobble).

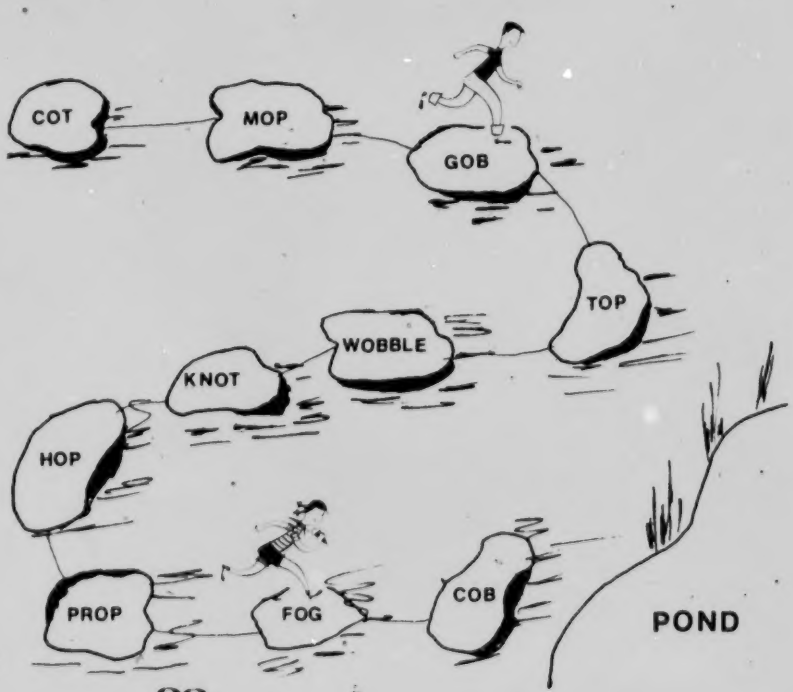
Foam number cube for each player numbered 1-6.

Larger cutout to represent the monster's pond.

Procedure

Lay the cutout rocks in a path around the playing area with the monster's pond at the end.

To keep the cutouts reasonably clean, players can remove their shoes.

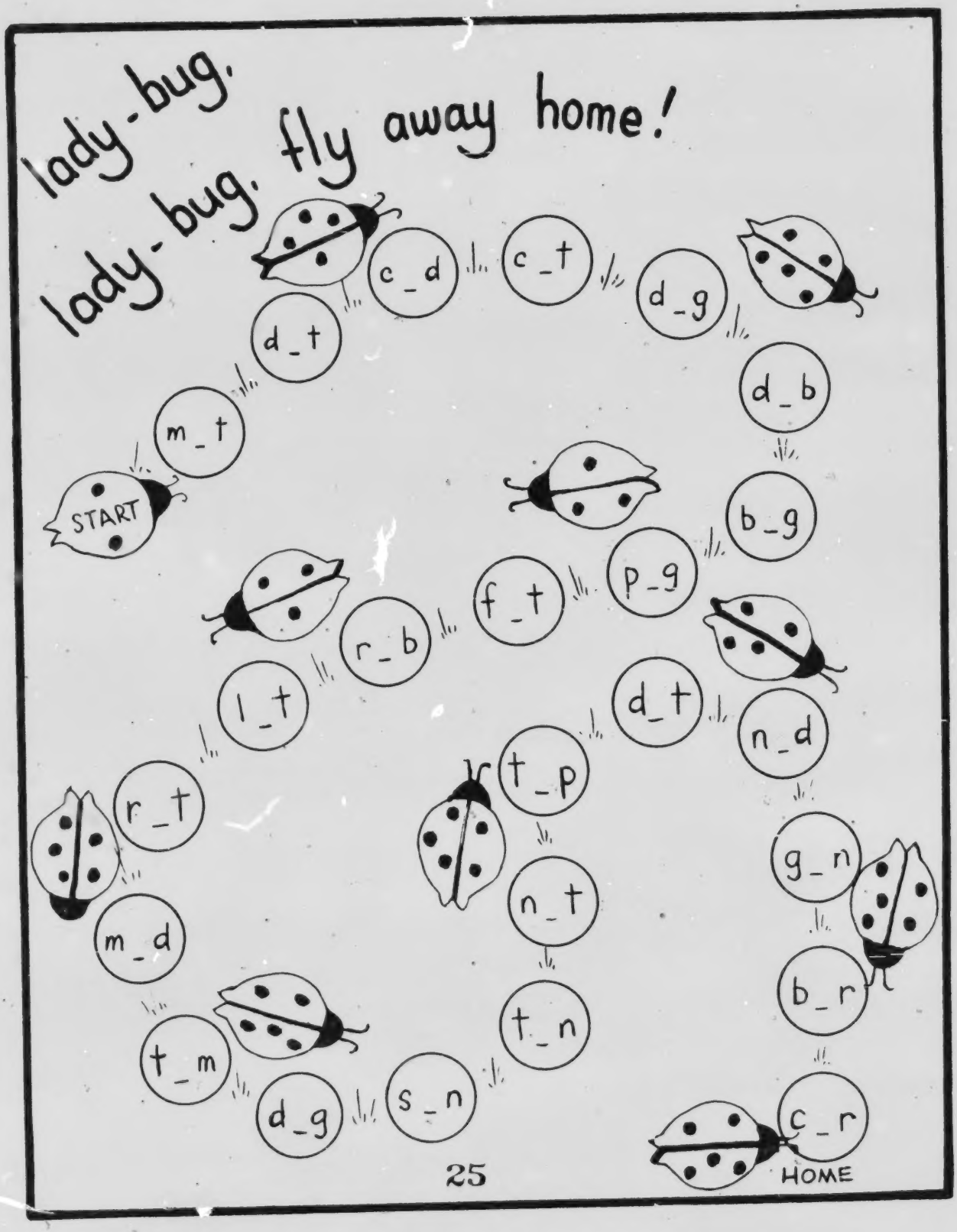


22

Procedure (Cont.)	In turn, each player rolls a cube and walks the number of spaces (cutouts) indicated. If the player can read the word on which he lands, he may remain there. If not, he returns to his previous position. The first person to the monster's pond is the winner. Note: This is a larger version of the typical "Road Race" board game. It requires more space but has the advantage of involving the player's whole body in moving from one word to another.
Submitted by	Elizabeth Kurtz Adams Elementary School Eugene, Oregon

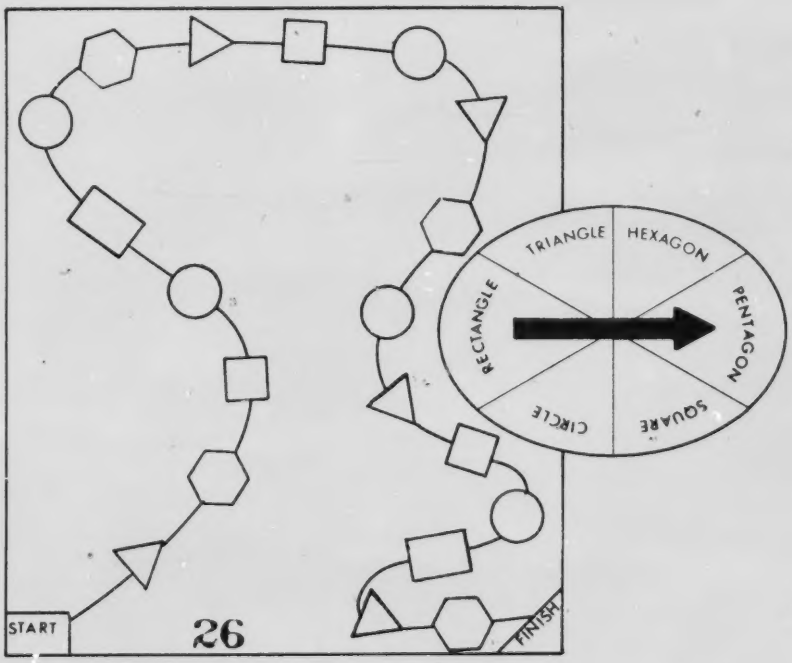
LADY BUG

Objective	To teach use of vowels
Level	1-3
Players	2-4
Materials	A game board with a path of 20 spaces. In each space is written a three letter word with the middle vowel missing (e.g., m_t, d_t, n_t, g_n, c_r). Spinner or number cube. Place-markers for each player.
Procedure	First player rolls the number cube, calls out a vowel and moves his place-marker the number of spaces or words indicated on the cube. The player must read each word as he passes, substituting the vowel he named. The marker is placed on the last word read correctly. First player to reach "Home" is the winner. See illustration, next page.
Variations	See other board games.
Submitted by	Genevee Turbell District Resource Center Salem School District Salem, Oregon


lady-bug,
lady-bug, fly away home!
START
c_d
c_t
d_g
d_b
b_g
p_g
f_t
r_b
l_t
d_t
n_d
t_p
n_t
t_n
s_n
d_g
t_m
m_d
r_t
g_n
b_r
c_r
HOME
m_t
d_t
25

POLYGON SPIN

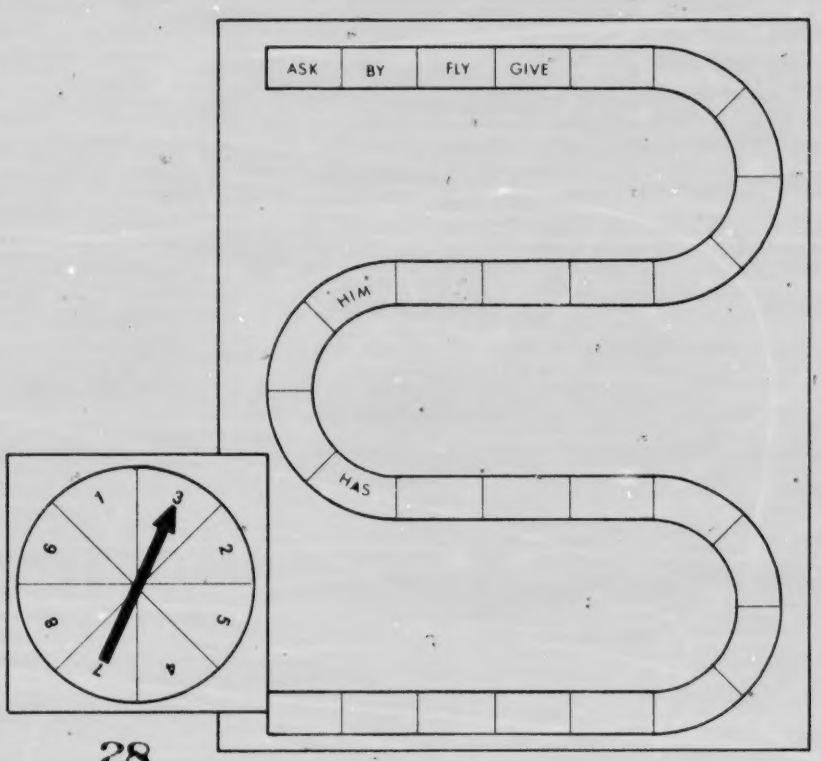
Objective	To practice identifying shapes
Level	1-6
Players	2-4
Materials	Game board with a path of different shapes such as triangles, squares, hexagons, ellipses. Spinner divided into wedges. A word for the shapes which appear on the playing board should be entered in each wedge. Place-marker for each player.
Procedure	In turn, each player turns the spinner and moves his placemarker to the nearest shape indicated. First player to reach the finish is the winner.
Variations	The level of this game can be adjusted by the kinds of polygons and other shapes used on the playing board.



Variations (Cont.)	Instead of shapes, the game can be adapted to practice color identification by using words for different colors on the spinner and corresponding colored spaces on the playing board. See "Geometry Bingo."
Submitted by	Eugene Math Center Dr. Oscar Schaff Eugene School District Eugene, Oregon

ROAD RACE

Objective	To practice vowel and consonant sounds using Dolch Sight Word List
Level	1-6
Players	2-4
Materials	A game board with a path of approximately 32 squares on tagboard or railroad board. In 27 of the squares should be a word from the Dolch Sight Word List or other word list. In the remaining five squares insert a free space, penalty squares (e.g., "Go to Start") and spaces for "Start" and "Finish." The game board can be enlivened with cartoon drawings of people and animals. Spinner. Place-marker for each player.

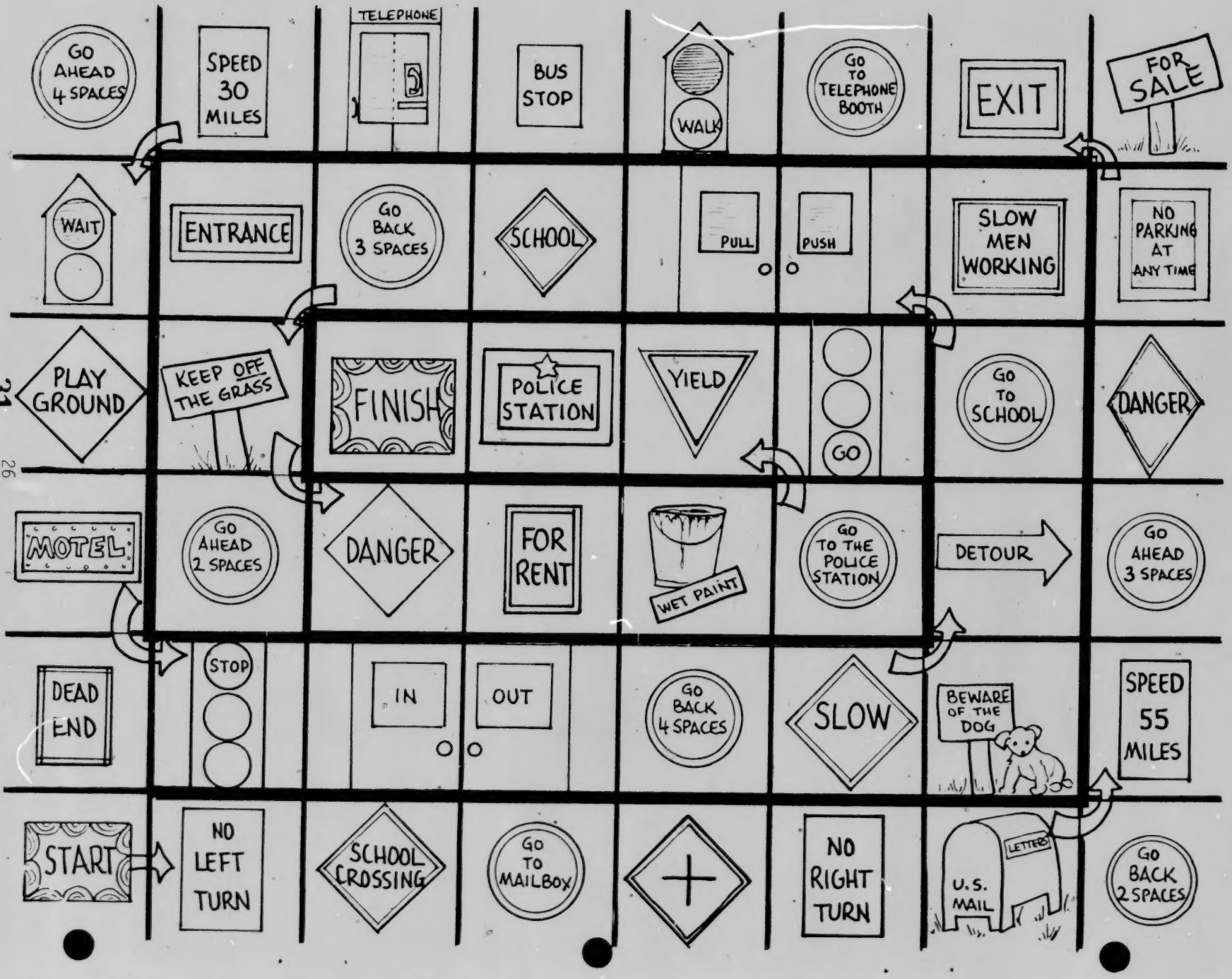


28

Procedure	Each player spins the spinner to determine the number of spaces he may move. The player must then read the word in the space to which he will move his marker. If unable to read the word, he loses his turn and play passes to the next student on the left. If the space is a free space or penalty square, the player obeys the instructions printed there.
Variations	1) Substitute arithmetic problems to be answered before the student advances. Also, you can have the player read each word as he moves. 2) A variation of the format for this activity is a game called "Sentence Parts" which uses question cards instead of number cubes to determine the movement of players during the game. Each card presents a sentence and asks the player to identify a particular part of it (e.g., subject, verb, object). A correct response allows the player to advance one space. Answers to questions can be put on the reverse side of each card to make the game self-correcting. First player to reach the finish wins.*
Submitted by	Manzanita Project A Systems Approach to Individualized Instruction Josephine County Schools Grants Pass, Oregon *Linda Milne Harbor Lights Junior High School Bandon, Oregon

SIGN GAME

Objective	To practice sign recognition
Level	1-2
Players	2-4
Materials	Game board with about 48 spaces in a path. A replica of a sign is drawn in each space (e.g., For Sale, Play Ground, WAIT--a traffic light, EXIT). Spinner or number cube. Place-marker for each player.
Procedure	First player rolls the number cube and moves the number of spaces indicated. The player reads the sign on which his marker lands. If the player cannot read the sign, his marker is returned to its original space. Play continues in turn until a player reaches the last square marked Finish. See illustrations on next page.
Variations	Players can be required to read each sign passed. Instead of lettered signs, draw in the new international graphic symbols now being used on highways, in airports and other paublic places.
Submitted by	Genevee Terbell District Resource Center Salem School District Salem, Oregon

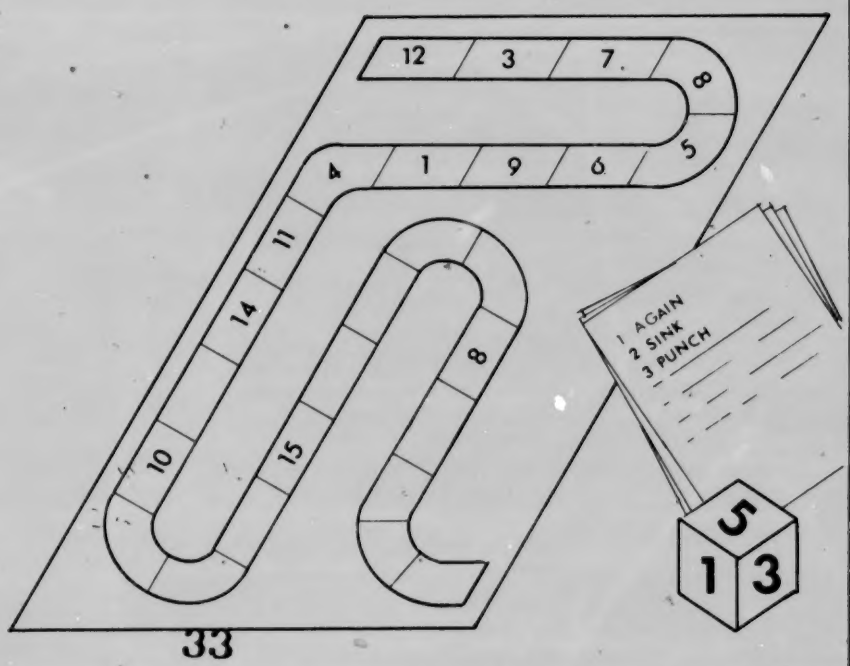

GO AHEAD 4 SPACES
SPEED 30 MILES
TELEPHONE
BUS STOP
WALK
GO TO TELEPHONE BOOTH
EXIT
FOR SALE
WAIT
ENTRANCE
GO BACK 3 SPACES
SCHOOL
PULL
PUSH
SLOW MEN WORKING
NO PARKING AT ANY TIME
PLAY GROUND
KEEP OFF THE GRASS
FINISH
POLICE STATION
YIELD
GO
GO TO SCHOOL
DANGER
MOTEL
GO AHEAD 2 SPACES
DANGER
FOR RENT
WET PAINT
GO TO THE POLICE STATION
DETOUR
GO AHEAD 3 SPACES
DEAD END
STOP
IN
OUT
GO BACK 4 SPACES
SLOW
BEWARE OF THE DOG
SPEED 55 MILES
START
NO LEFT TURN
SCHOOL CROSSING
GO TO MAILBOX
NO RIGHT TURN
LETTERS
U.S. MAIL
GO BACK 2 SPACES

SOUNDO

Objective	To practice identifying short vowels
Level	1-3
Players	2-4
Materials	Game board with a path of about 34 spaces. In addition to the start and finish spaces, a word using a short vowel should be printed in each space (e.g., red, can, puppy, lid). Place-marker for each player. Foam number cube, numbered 1-6.
Procedure	In turn, each player rolls the cube and moves the number of spaces indicated. The player must then spell the word in the space, say the word and identify the short vowel. If the response is incorrect, the player returns to the previous space. First player to reach the end is the winner.
Variations	See *Hop the Rocks to the Monster's Pond.* Add an element of risk to the game by including penalty and bonus spaces such as "Go Back to Box" or "Move Ahead to Win." Pictures representing each word can also be included in each space. The game board can be drawn on a piece of 8 1/2" x 11" by laying out a concentric path. If needed this can be mounted on a piece of tagboard or used as a master from which to make duplicates. The smaller playing board also makes the game easier to store. See *Lady Bug*.
Submitted by	District Resource Center Genevee Terbell Salem School District Salem, Oregon

TRAVEL

Objective	To teach spelling
Level	4-6
Players	5 players; 1 reader
Materials	Game board with a path of spaces (number can vary). A number from 1-15, which corresponds to a numbered list of spelling words, appears in each space. Spinner or number cube. Place-marker for each player. List of 15 numbered spelling words.
Procedure	The first player rolls the number cube and moves his place-marker the number of spaces indicated. The reader reads the word from the spelling list which corresponds to the number in the space where the player landed.



Procedure (Cont.)	If the player spells the word correctly, his marker remains on the space. If not, he must return to the space where he began his move. First player to reach the end of the path wins.
Submitted by	Donna L. Embree Frances Willard Elementary School Eugene, Oregon

CHECKERBOARD GAMES

The games in this section use a game board which has been marked off into squares similar to a checkerboard. The number of squares varies with the game.

CHECKERS

Objective	To practice vowel and consonant sounds using Dolch Sight Word List
Level	1-6
Players	2
Materials	Checkerboard on 8 1/2" x 11" paper or tag board. Checkers. Checkerboard should have dark squares and light squares, with words from the Dolch Sight Word List or other word lists in each light square.
Procedure	Students play the game as they would checkers except that before a player can move to a square or jump an opponent's checker, he must say the word of the square to which he is moving. If he does not know the word, the player cannot move and must wait until the next turn.
Variations	Level of use will be determined by the difficulty of the words used in the squares. Substitute arithmetic problems for vocabulary words.
Submitted by	Manzanita Project A Systems Approach to Individualized Instruction Josephine County Schools Grants Pass, Oregon

COMPOUND BINGO

Objective — To teach compound words

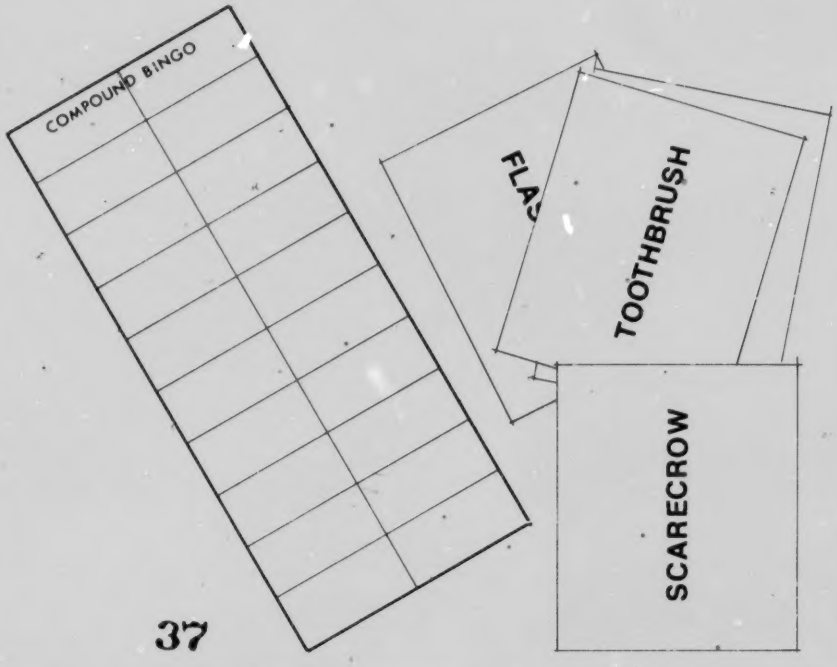
Level — 2-4

Players — 2-4

Materials — A game board for each player made of tagboard. Each board is divided into 20 three-inch squares.

Forty three-inch square cards, each with a compound word such as "teakettle," "toothbrush," "flashlight," "scarecrow." On the reverse side of each card the compound word is divided into its components.

Procedure — The word cards are shuffled and placed so all players can see them. In turn, each player reads the top word card. If the player can read the word correctly, it is placed on his playing board. If he cannot read the word, play passes to the next person. First person to fill all of the squares on his board is the winner.



37

Variations	A second way to play *Compound Bingo* is to have each player read the word and divide it into its two parts. When this is done successfully, the player can put the word on his board. This version is self-correcting because the back of each card has the proper answer. If a player cannot identify the two parts of the word, the answer is on the reverse side of the card.
Submitted by	Elizabeth Kurtz Adams Elementary School Eugene, Oregon

PLAY IN THE HAY

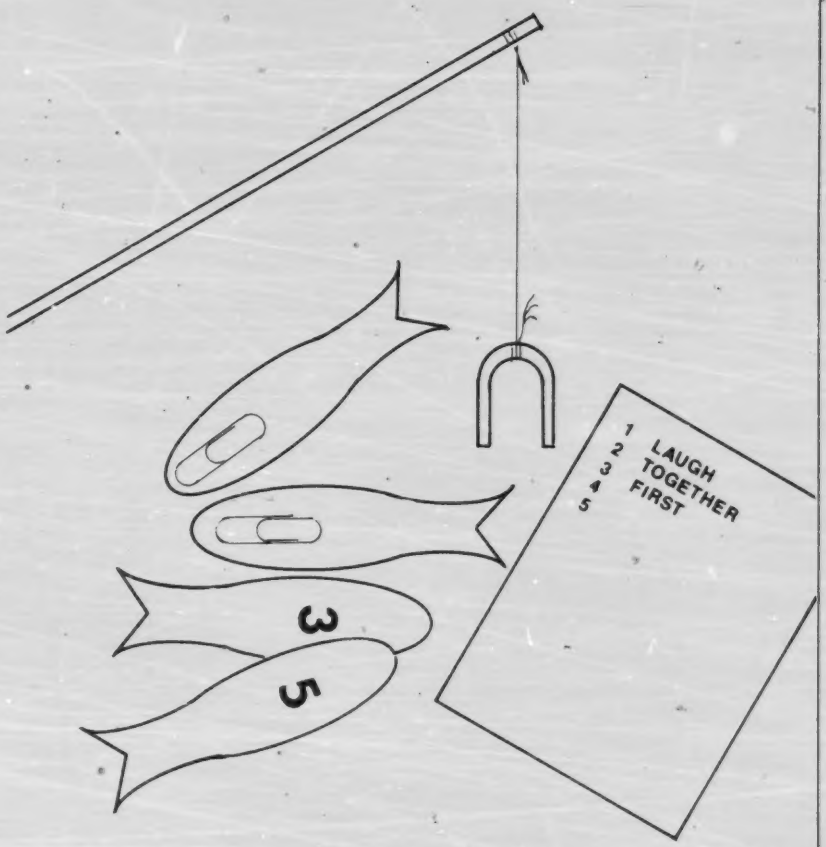
Objective	To teach the long "a" sound
Level	1-2
Players	4
Materials	Game board made of tagboard with path of about 21 squares. Each square has a different word which uses the "ay" sound (e.g., bay, clay, day, sway, away, or pray). Spinner or number cube. Place-marker for each player.
Procedure	Beginning player throws the number cube and moves the number of spaces indicated. He must read each word in each space along the way. If he misses a word, the player stops on that space. First player to reach the "Finish" is the winner.
Variations	1) The players can spell the words out as they move. 2) This game is similar to *Road Race* used by the Manzanita Project. (See page 23.) An element of chance can be added by including spaces for free moves and penalties. Arithmetic problems can be substituted for words.
Submitted by	Elizabeth Kurtz Adams Elementary School Eugene, Oregon

GAMES WITH OTHER FORMATS

This section includes games with formats which cannot be placed in the preceding categories. "Fish," for example, does not use a checkerboard format or a standard start to finish game board.

FISH

Objective	To teach spelling
Level	4-6
Players	4-5
Materials	Fishing poles made of short pieces of dowl with string and magnets attached as hooks. Forty fish cut out of cardboard with a paper clip attached to each one. A number is written on each fish; the number corresponds to a word on a spelling list of twenty words.



41

Procedure	The fish are placed on a table face down. In turn, each player catches a fish with the magnetic hook. He must then spell the word indicated by the number on the fish. If he spells the word correctly, he keeps the fish. One or more fish for each cast is acceptable, but the player must spell every word indicated. The player with the most fish wins the game.
Submitted by	Donna L. Embree Frances Willard Elementary School Eugene, Oregon

42

WORD CONCENTRATION

Objective

To practice identifying synonyms and antonyms

Level

4-5

Players

2-4

Materials

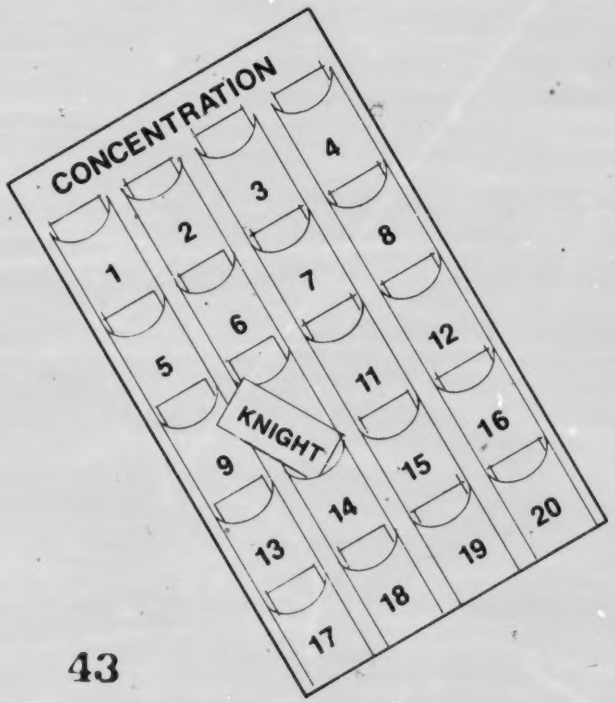
Game board consisting of 20 sequentially numbered envelopes, mounted in columns on tagboard.

Set of 20 word cards (ten pairs of synonyms or antonyms).

Procedure

The word cards are inserted in the envelopes face down. First player chooses two numbered pockets, turns over the cards and reads each word. If they match, the player receives one point; the cards are left face up. If the cards do not match, or if the player cannot read the words, the cards are turned over again and play passes to the next person.

Players continue in turn until all cards are face up and matching. Player with the most points wins the game.



Variations	Words and their definitions can be used in place of the synonym pairs.
Submitted by	Donna L. Embree Frances Willard Elementary School Eugene, Oregon

44

MATHEMATICS GAMES

45

RACE GAMES

Each game in this section uses a game board with a starting point, a finish point and a series of steps in between. Players race from start to finish solving problems to determine how far and how fast they move.

FRACTION RALLY

Objective

To practice reducing fractions to lowest terms

Level

4-6

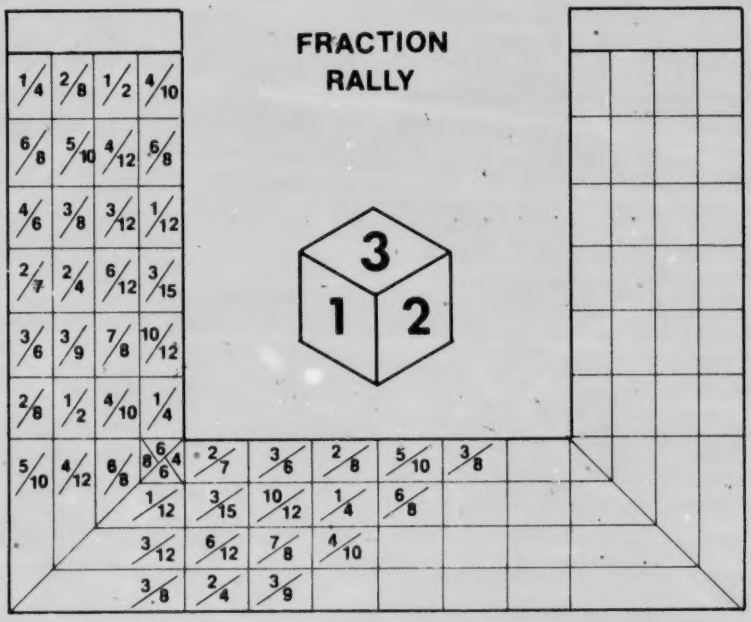
Players

2-4

Materials

A game board with four parallel tracks and an equal number of spaces in each one. The first space in each track is marked "Start" and the last space is "Finish." A fraction is written in each space. Follow the same pattern of fractions for each track, but start the pattern at different points on each track. Select a fraction at about the quarter point and follow the same order for the second track. Start the third track at the half-way point of track one; begin the fourth track at the three-quarter point of the fraction sequence. It helps to use a different color for each track. Some of the fractions are reduced to their lowest terms, some are not. Be sure to have at least one reduced fraction in any six consecutive spaces.

Cube numbered 1-6.



Materials (Cont.)	Place-marker for each player. A list of fractions used in the game and their lowest terms (this helps to avoid arguments).
Procedure	First player rolls the number cube. Without moving his place-marker he must decide where he would land if he moved the number of spaces indicated and if the fraction in that space is in lowest terms. If it is, he may move to that space. If the fraction is not in lowest terms, the player cannot move on that turn. Play continues until a player lands exactly on the "Finish." Player loses his next turn if he starts to move when he will not land on a reduced fraction.
Variations	This game can be varied by asking each player to call out the reduced form of each fraction passed on the way to a new space. If he makes an error, he must go back to where he started and loses the move for that turn.
Submitted by	Kathy Reed Rockwood Elementary School Portland, Oregon Note: This game is an adaptation of *Prime Drag* by Creative Publications of Palo Alto, California. Instead of fractions it uses prime numbers.

*HOPSCOTCH**

Objective

To practice multiplication

Level

3-6

Players

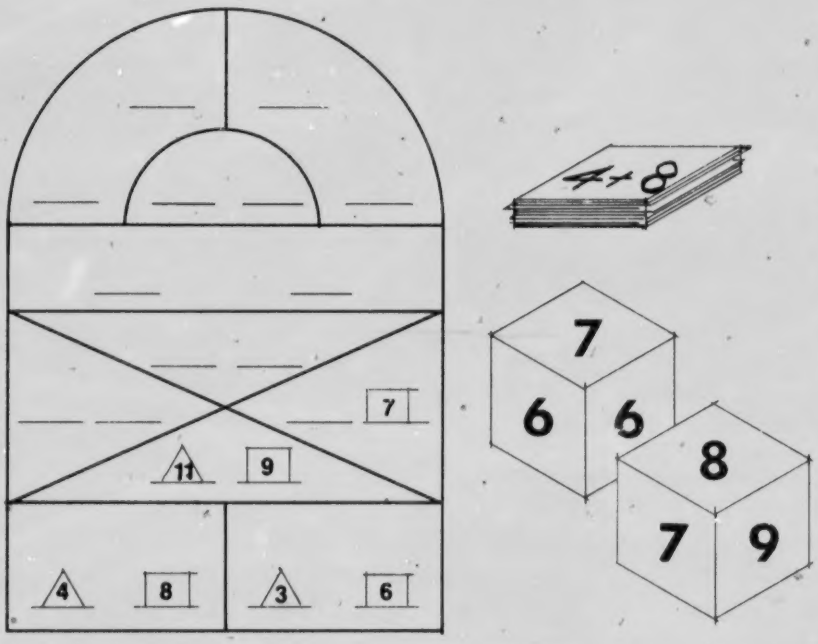
2-4

Materials

Game board with a hopscotch diagram on it. The spaces in the diagram should be large enough to hold a 3" x 5" card; each space should have slits so the cards can be changed as needed.

Two foam number cubes. The sides should be numbered according to the multiplication process being practiced. If the players are practicing multiplication by 6 or 7, then one cube would have three sides labeled 6 and three sides labeled 7. The other cube can be numbered 1-6 or 4-9.

Set of ten cards, one for each space in the hopscotch diagram. Each card should be labeled with a product obtained by multiplying one number from each cube. For example, if the players are practicing multiplication by 6 and 7, and one cube is labeled 4-9, then one card could be labeled 24, another could read 28, another 36 and so on.



48

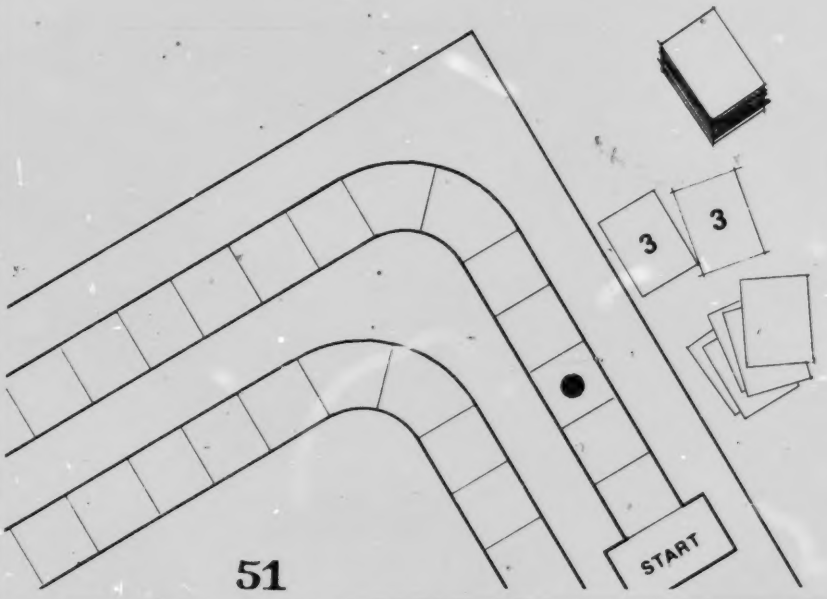
Procedure	Place the ten product cards in any order on the playing board using the slits in each space to hold them. In turn, each player rolls the number cubes and multiplies the number indicated on the top of each one and states the product. If it is in the first square of the hopscotch diagram, he moves his marker into that space and rolls the cubes again for the next space. Play passes to the next person when the product of the two cubes does not appear in the appropriate space or when the player states an incorrect product. For example, the product given in the first space is 35. If the player rolls a 7 and 5 and announces that the product is 35, he may move his marker into that space and take another turn. If the player incorrectly states the produce of 7 and 5, or if he rolls any other combination not equal to 35, then the player does not move his marker and play passes to the next person.
Variations	This game is also known as *Station Race*.* Instead of number cubes, cards may be used with problems or equations written on them such as 4 x 7 = ? or 6 + 5 = ?. A player then draws a problem card, solves it and moves if the answer appears in the appropriate space. This method has the advantage of expanding the number of problems the players solve during the course of a game.
Submitted by	Kathy Reed Rockwood Elementary School Portland, Oregon *Corvallis Math Resource Center Bob Mittleider Corvallis School District Corvallis, Oregon

L AND M GAME

Objective	To practice linear measurement
Level	1-3
Players	2-4
Materials	Game board with a "track" of squares for players' markers. In the area not used by the track, draw lines of various lengths, such as one inch, five inches, etc. Label each line A, B, C, and so on. Problem deck consisting of cards, each with a different instruction or problem: "Move ahead as many spaces as there are inches in Line B"; or "Move backwards as many spaces as there are 1/4 inch units in Line F." A ruler and a place-marker for each player.
Procedure	The first player draws the top card from the problem deck, answers the problem on the card and moves the number of spaces indicated. If the player incorrectly answers the problem, his marker remains where it was before drawing and play passes to his left. If the problem calls for a move backward and the player incorrectly answers, he must move his marker back twice the number of spaces actually required by the problem. The winner is the first person to move his marker across the finish line.
Variations	The game can be used for practice in metric measurement, or adapted to other types of measurement problems such as volume.
Submitted by	Kathy Reed Rockwood Elementary School Portland, Oregon

TRACK RACE

Objective	To practice addition and division
Level	3-6
Players	2-4
Materials	A game board with a path of 20-40 spaces. For two players use a cribbage board. Place-marker for each player. One set of ten cards each, numbered 1-10, for each player.
Procedure	Shuffle the cards and deal five to each player. Place the remaining cards on the table to form the draw pile. The first player puts a card from his hand on the table. The player to his left puts down a card from his hand, adds the two together, announces the sum and decides on a divisor for it. The divisor should be less than the sum and should divide into the sum without a remainder. The size of the divisor determines how far his marker is advanced on the game board.



51

For example, the first player put down a 3. The second player put down a 5 and gave the sum of the two as 8. He decided that a divisor of 8 which is less than 8 and divides into 8 without a remainder is 4. He then moves his marker four spaces and draws a card from the draw pile.

The next player then adds a card from his hand to the one put down by the previous player, decides on a divisor and moves accordingly. Play continues until all cards are used. The winner is the player whose marker is farthest along the track or whose marker reaches the finish line first.

Variations

Draw a number in each space of the track and use a spinner to decide what the divisor will be. The remainder determines how far the player can move his marker. If there is no remainder, the player remains where he is until the next turn.

Submitted by

Corvallis Math Resource Center
Bob Mittleider
Corvallis School District
Corvallis, Oregon

CARD GAMES

This section includes mathematical card games. Each one requires a set of number cards which the players use to solve problems to win.

ADDITION CONCENTRATION

Objective

To practice addition

Level

1-3

Players

2-4

Materials

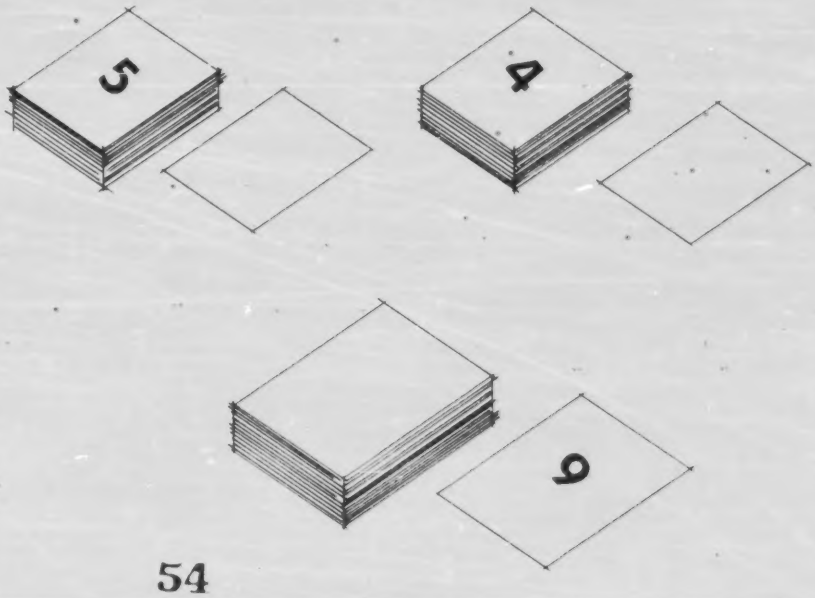
Deck of addend cards with two cards for each numeral 0-9.

Deck of sum cards numbered 1-18 in another color.

Procedure

Place the addend cards for numerals 0-9 in four stacks of five cards each face down. Place the sum cards face down in one stack; turn the top sum card over and place it next to the stack.

In turn, each player turns up any two addend cards and computes their sum. If the two cards equal the sum card, the player takes it, turns the addend cards face down and continues playing by turning over the next sum card. If the two addend cards do not equal the sum, they are turned face down and play passes to the next person on the left.



54

Procedure (Cont.)	Play continues until all sum cards are claimed. The player with the most sum cards is the winner.
Variations	Adapt the game to practice identifying fraction equivalents. Make a deck of cards with fraction equivalents on them (e.g., use 1/2 on one card, .5 on another, 50% on a third and 2/4 on a fourth). Turn all cards face down. In turn, each player gets to turn over two cards. Player with the most cards at the end of the game is the winner. See *Equivalent Rummy*.
Submitted by	Corvallis Math Resource Center Bob Mittleider Corvallis School District Corvallis, Oregon

CRYPTO

Objective

To practice addition, subtraction, division and multiplication

Level

4-6

Players

2-5

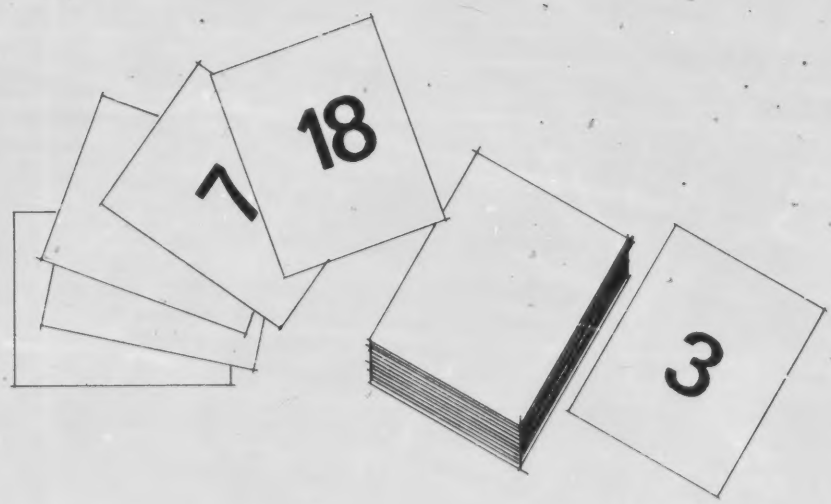
Materials

Deck of cards, numbered as follows: three cards each for numerals 0-8; 9-13 have two cards each; and one card each for numerals 14-18. Cards can be made of heavy paper or tagboard.

Procedure

Deal each player five cards. Turn up card from the remaining deck. Players should not look at their hands until the card is turned up. All players try to use each of the five cards in their hands along with the four basic mathematical operations to make a combination equal to the card turned face up.

The first player to use all five cards this way yells "Crypto," and then explains his combination to the other players. If the result is correct, the player gets the sum of his five cards plus the "up" card added to his score.



Procedure (Cont.)	Any player who thinks his hand is impossible may call "Impossible" before someone else has called a "Crypto." If the other players cannot make a "Crypto" out of his hand within three minutes, the player gets 50 points added to his score. If the players can make a "Crypto" with the hand, the player who called "Impossible" loses 50 points. The first player to reach 150 points is the winner.
Variations	See *Nimble Numbers*.
Submitted by	Corvallis Math Resource Center Bob Mittleider Corvallis School District Corvallis, Oregon

EQUIVALENT RUMMY

Objective

To teach fraction equivalents

Level

2-4

Players

2-4

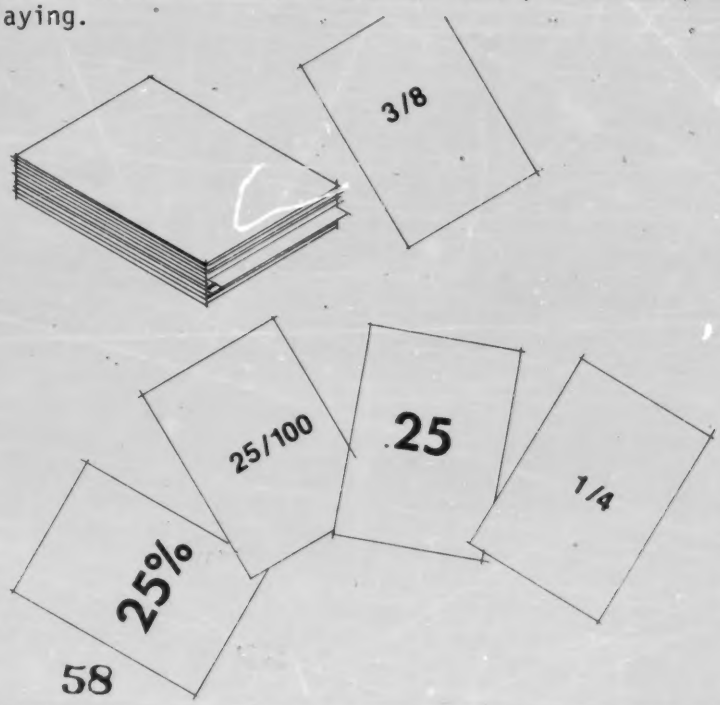
Materials

A deck of 88 cards with a fraction marked on each. Each fraction is marked on four cards, each time in a different form (e.g., 1/2, .5, 50/100, and 50%).

Procedure

Deal five cards to each player. Remaining cards are placed face down to form the draw pile. The top card is turned over to form the discard pile. Player to the left of the dealer begins by taking a card either from the discard pile or from the draw pile. He then discards one card so that he has five cards in his hand at all times. When he has four cards showing equivalent fractions, he lays the set in front of him. Play continues until all cards are used.

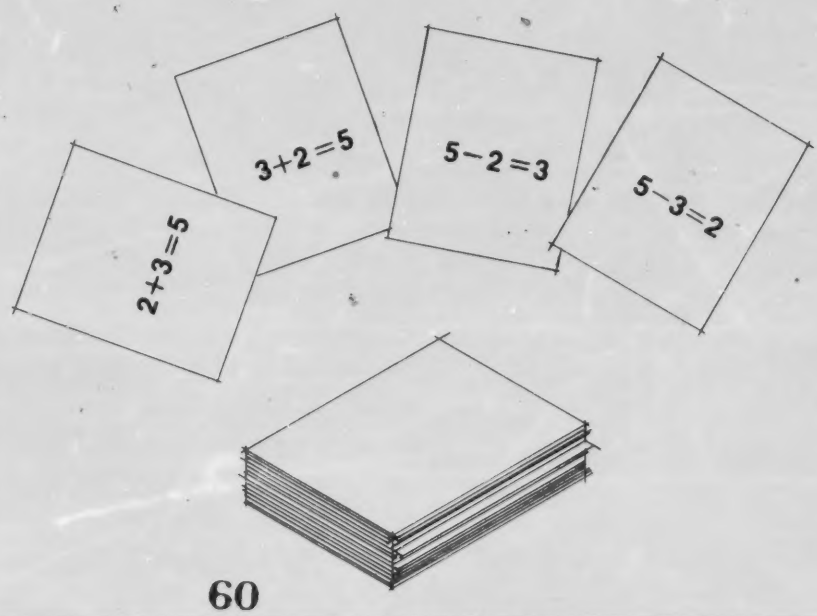
When a player lays down a set and discards, he will have to draw five cards from the draw pile to keep playing.



Variations	See *Addition Concentration*.
Submitted by	Corvallis Math Resource Center Bob Mittleider Corvallis Schools Corvallis, Oregon

MATH FAMILIES

Objective	To teach addition; subtraction and other number relationships
Level	1-4
Players	1-6
Materials	Deck of math cards. Each card has an addition or subtraction equation on it, with four such cards making up a family. For example, the cards with 2+3=5, 3+2=5, 5-2=3, and 5-3=2 make up a family. The number of sets or families can be varied as well as the difficulty of operation.
Procedure	Shuffle the cards and deal five cards to each player. Remaining cards are placed face down in the center. The first player asks any one of the other players for a math card. If the player asked has the requested card, he must give it up; if not, the player must draw the top card from the remaining deck. If this card is the one he requested, the player gets another call. If not, play passes to the next player.



When a player has a family, he lays it on the table and keeps playing. Player with the most math families wins.

Variations

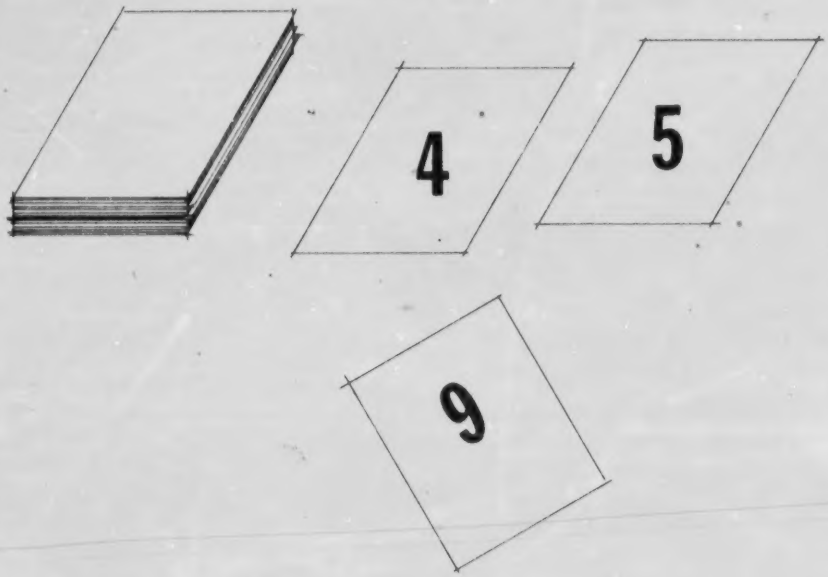
See *Multiplication Rummy*.

Submitted by

Jessie A. Holsinger
Fort Vannoy Elementary School
Grants Pass, Oregon

NIMBLE NUMBERS

Objective	To practice addition, subtraction, multiplication and division
Level	3-6
Players	4-6
Materials	Two sets of 19 cards numbered 0-18.
Procedure	Deal one card to each player. From the remaining cards, draw two cards and place them face up in the center of the playing area. Each player attempts to put the card he is holding in a relationship with the two "up" cards. The winner is the first player to explain how the three numbers fit together. For example, if the two cards turned up are 4 and 8, then two possible answers would be 2 (8:4=2) and 12 (8+4=12).



Variations	This game can be adapted to use with an entire class by expanding the number of cards in the deck. Deal all of the cards out and choose two students to begin the play. The winner of each game begins the next. See *Crypto*.
Submitted by	Georgana Harrison Warrenton Elementary School Warrenton, Oregon

CHECKERBOARD GAMES

Each game in this section uses a game board which has been marked off into squares, similar to a checkerboard. For some activities, there are only nine squares required for the playing board; other games call for many more.

GEOMETRY BINGO

Objective

To practice identifying geometric shapes

Level

1-3

Players

3-10

Materials

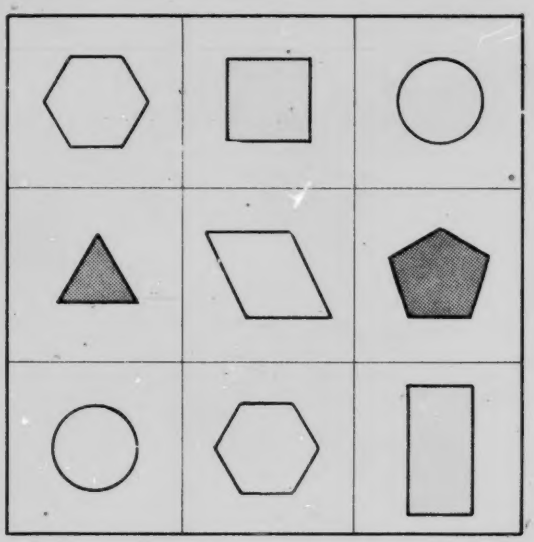
Bingo cards divided into nine equal squares. Each square has a different geometric shape in a different color.

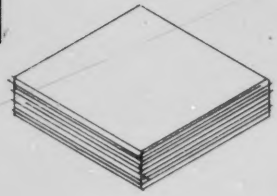
Place-markers for each player.

Call cards with colored geometric shapes.

Procedure

One person acts as the caller. He draws a card and calls out the color and the name of the geometric shape. The players put a place marker over that colored shape if it appears on their bingo card. The first player to fill a row of squares horizontally, vertically or diagonally wins.





Variations	Substitute fractions for the geometric shapes to practice identifying numerical fractions. Instead of having the caller say the fraction, he can hold up a card with the fraction pictorially represented (e.g., a rectangle colored half red and half white is 1/2 on the bingo card). See *Polygon Spin*.
Submitted by	Corvallis Math Resource Center Bob Mittleider Corvallis School District Corvallis, Oregon

MULTIFACTO

Objective	To practice multiplication
Level	3-6
Players	2-6
Materials	Game board with between 64 and 100 squares. Set of numbered cards the same size as the squares on the playing board. Each side of each card is labeled with a number.
Procedure	Deal each player ten number cards. Place the remaining cards in a stack along side the playing board. This is the draw deck. The first player begins by placing a card on the board in any space. The next player must place a card next to the one previously played so that the numbers on the adjoining sides are multiples of one another. For example, if the first player puts down a card with the numbers 6, 8, 42 and 21 on it, the second player could place next to it a card

Procedure (Cont.)	which includes the number 40. The adjoining sides of the cards should be the ones labeled 8 and 40, since 40 is a multiple of 8. Cards may be contiguous on more than one side. When unable to use any of his cards, a player draws from the draw deck until he can make a play. If no cards remain in the reserve deck and a play cannot be made, play passes to the next person. The game ends when a player has used all the cards in his hand or until no one can make a play. Scoring for each play is as follows: one edge joining = one point two edges joining = three points three edges joining = five four edges joining (filling in a "hole") = ten the first player to use all of his cards scores a bonus of twenty points players still holding cards deduct two points for each card Player with highest score is the winner. Teachers may want to try the game a few times and renumber some of the cards to make them compatible.
Submitted by	Eugene Math Center Dr. Oscar Schaff Eugene School District Eugene, Oregon

ON AND OFF

Objective

To practice addition and subtraction

Level

1-3

Players

2

Materials

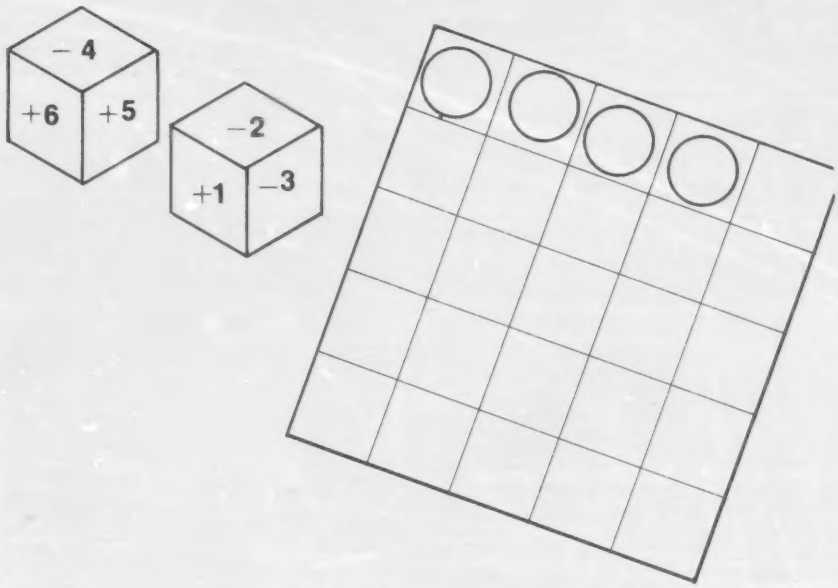
Two playing boards of 25 squares each.

Two sets of 25 space holders.

Two foam cubes with the numerals 1-6 plus an addition or subtraction sign for each one (e.g., one cube would have 2, +5, 1, +3).

Procedure

Each player rolls the number cubes and adds or subtracts space holders from his playing board as directed. If a player rolls a +5 and a +3, then he would add eight space holders to his board. If a player rolls a +4 and a 5, he would remove one space holder. The winner is the first player to fill all 25 squares of his board.



Submitted by	Eugene Math Center Dr. Oscar Schaff Eugene School District Eugene, Oregon

THREE GUIZINTA

Objective

To practice addition and multiplication

Level

3-6

Players

2-6

Materials

A playing board divided into 100 squares.

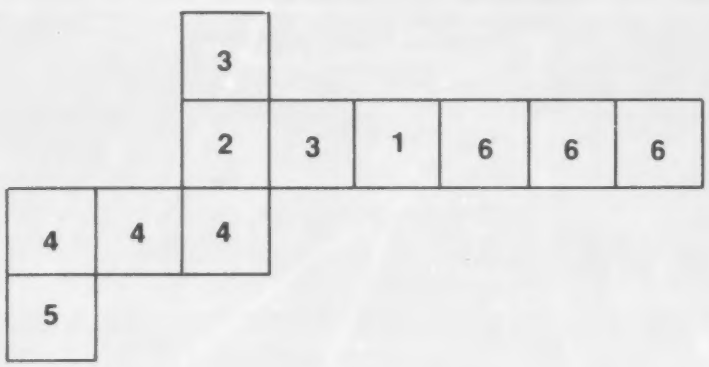
A set of 100 cards numbered 0-9 (ten cards for each numeral 0-9).

Procedure

The procedure for playing this game is similar to that of "Scrabble." Instead of spelling words, however, each player attempts to form number combinations which equal a multiple of three.

Deal five cards to each player. Place the remaining cards face down to one side of the playing board. This pile is the draw deck.

Using the cards in his hand, the first player begins by placing one to three cards (which equal a multiple of three) on the board in adjacent squares.



Procedure (Cont.)	The next player adds cards to one already on the board to form another combination equal to a multiple of three. At the end of each turn, the player replaces the cards he played by drawing from the draw deck. A line may not have more than five cards. During a turn, a player may place his cards in one direction only (horizontally or vertically) and only on adjacent or contiguous squares. Should a player form both a vertical and horizontal line (two or more cards) in one turn, the sum of both lines must be a multiple of three. The score for each turn is the total of all lines made in that play. The winner is the player with the highest score when the game ends or the one who reaches a predetermined number first. The game ends when all of the cards in the draw deck are gone.
Variations	Vary the game by using multiples of other than three.
Submitted by	Darlene Mullin McKinley Elementary School Salem, Oregon

TIC TAC TOE VARIATION

Objective

To practice multiplication

Level

3-6

Players

2 or more

Materials

Paper and pencil for each player.

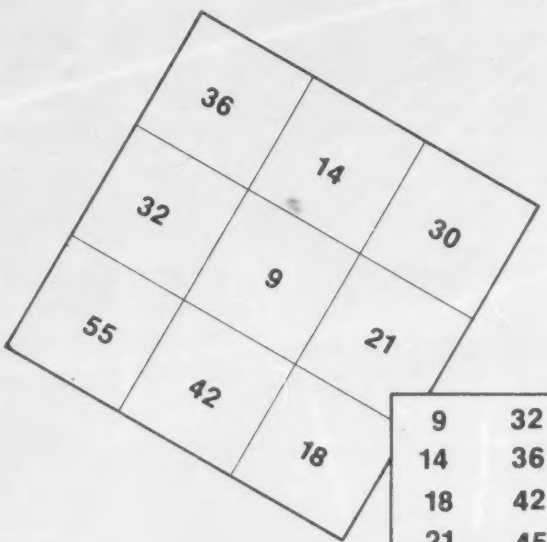
Chalkboard or overhead projector.

Procedure

Each student draws a playing board with nine squares arranged in three rows of three squares each. The students copy a list of numbers in the squares in any order they wish from the chalkboard or overhead projector.

The game leader calls out sets of factors (also from the list) and the students cross out the product for each set if it appears on their board.

The winner is the first one with three squares in a row crossed out.



9	32	57
14	36	60
18	42	
21	45	
25	50	
30	55	

Variations	Addition, subtraction and division problems can be substituted for multiplication. By writing words in each square and reading definitions, this game can be used for vocabulary drill as well. Students will be able to play this game without teacher supervision if provided with a list of factors and products or other such problems. A written list eliminates disputes over the answers provided by the students.
Submitted by	Ellamae Lenox Lebanon Junior High School Lebanon, Oregon

GAMES WITH OTHER FORMATS

This section includes games with formats which cannot be placed in the preceding categories. *Spineroo*, for example, does not use number cards or a game board, relying instead on a spinner as the major playing piece.

MAKE A MILLION

Objective

To teach the concept of place value

Level

1-3

Players

2-4

Materials

Large dice cup.

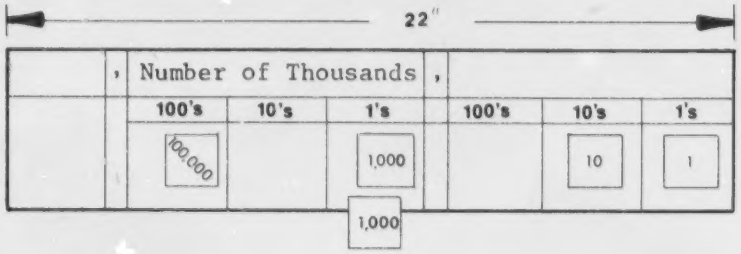
Five foam cubes, each cube has a side labeled 1; 10; 100; 1,000; 10,000; 100,000.

Procedure

In turn, each player rolls the cubes from a cup onto the table. He records the total of the numbers on top of each cube. For example, 100,000 + 1,000 + 1,000 + 1,000 + 1 would be written 103,001. On his next turn, the player adds the total to the previous one. Play passes around the table to the left. First player to reach or pass 1,000,000 wins the game.

Teachers may want to make a chart to assist the beginning students with writing the numerals.

Chart to help students who need assistance in writing the numerals:



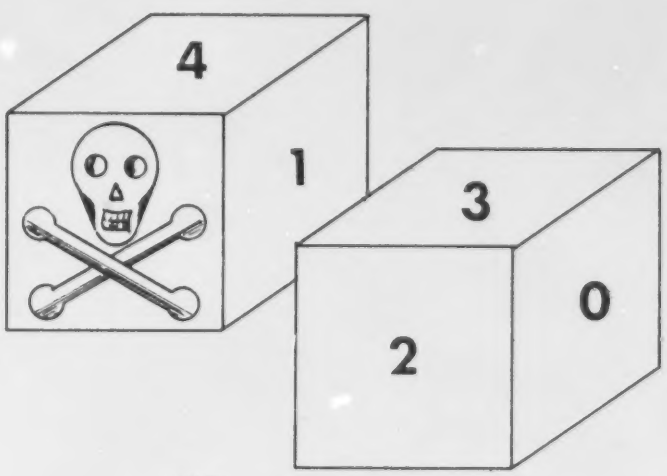
Recorded as 102,011.
The empty places show where to write 0.

Submitted by	District Resource Center Genevee Terbell Salem School District Salem, Oregon Eugene Math Center Dr. Oscar Schaff Eugene School District Eugene, Oregon

77

POISON

Objective	To practice addition
Level	1-3
Players	2-4
Materials	Two number cubes. Each cube is numbered 0-4 with a skull and crossbones on sixth side. This is the poison side.
Procedure	In turn, each player rolls the cubes and records the total as the score. A player may continue rolling and adding the numbers on the cube until a poison turns up. The total is recorded and play passes to the next person. If both poison sides turn up, the player loses his score and must begin again at 0. If a player feels "unlucky," he may stop his turn and let play pass to the next person. Players may set the score limit for the game.



78

Variations	For more advanced students, one cube can be labeled with numerals 5-9 in addition to the skull and crossbones.
Submitted by	Eugene Math Center Dr. Oscar Schaff Eugene School District Eugene, Oregon District Resource Center Genevee Terbell Salem School District Salem, Oregon

SPINEROO

Objective	To practice addition
Level	1-2
Players	2-4
Materials	Spinner with numbered wedges. The number of sections will be determined by the level of the students playing the game. Paper and pencil for scoring.
Procedure	For each game, the players select a number on the spinner and mark it with a clip or write it on a chalk board for all players to see. This number is the first addend. In turn, each player turns the spinner to determine the second addend. He then adds this to the first addend and announces the sum. If correct, the sum is the player's score for that turn. If the player's answer is not right, the correct sum is subtracted from his score. For example, at the beginning of the game the players select 6 as the first addend. A player turns the spinner. If it stops on 4, the player would add 6 and 4 and state that the sum is 10. The player's score for that turn is 10. If the player does not give the correct sum, then 10 is subtracted from his score.
Variations	This game can be used with teams of students or the players may also see how many correct sums they can make in a given time limit. Players can also use the game for subtraction and multiplication practice.
Submitted by	Corvallis Math Resource Center Bob Mittleider Corvallis School District Corvallis, Oregon

80

LIST OF GAMES BY LEVEL

Level 1

Addition Concentration, 59
Big Egg Game, 13
Checkers, 33
Find the Diamond Mine, 15
Geometry Bingo, 71
Hop the Rocks to the Monster's Pond, 17
L and M Game, 53
Lady Bug, 19
Make a Million, 83
Math Families, 65
On and Off, 75
Play in the Hay, 37
Poison, 85
Polygon Spin, 21
Road Race, 23
Sign Game, 25
Soundo, 27
Spineroo, 87

Level 2

Addition Concentration, 59
Big Egg Game, 13
Checkers, 33
Compound Bingo, 35
Equivalent Rummy, 63
Find the Diamond Mine, 15
Geometry Bingo, 71
Hop the Rocks to the Monster's Pond, 17
L and M Game, 53
Lady Bug, 19
Make a Million, 83
Math Families, 65
On and Off, 75
Play in the Hay, 37
Poison, 85
Polygon Spin, 21
Road Race, 23
Sign Game, 25
Soundo, 27
Spineroo, 87

Level 3

Addition Concentration, 59
Big Egg Game, 13
Checkers, 33
Compound Bingo, 35
Equivalent Rummy, 63
Find the Diamond Mine, 15
Geometry Bingo, 71
Hop the Rocks to the Monster's Pond, 17
Hopscotch, 51
L and M Game, 53
Lady Bug, 19
Make a Million, 83
Math Families, 65
Multifacto, 73
Nimble Numbers, 67
On and Off, 75
Poison, 85
Polygon Spin, 21
Road Race, 23
Soundo, 27
Three Guizinta, 77
Tic Tac Toe Variation, 79
Track Race, 55

Level 4

Checkers, 33
Compound Bingo, 35
Crypto, 61
Equivalent Rummy, 63
Fish, 41
Fraction Rally, 49
Hopscotch, 51
Math Families, 65
Multifacto, 73
Nimble Numbers, 67
Polygon Spin, 21
Road Race, 23
Three Guizinta, 77
Tic Tac Toe Variation, 79
Track Race, 55
Travel, 29
Word Concentration, 43

Level 5

Checkers, 33
Crypto, 61
Fish, 41
Fraction Rally, 49
Hopscotch, 51
Multifacto, 73
Nimble Numbers, 67
Polygon Spin, 21
Road Race, 23
Three Guizinta, 77
Tic Tac Toe Variation, 79
Track Race, 55
Travel, 29
Word Concentration, 43

Level 6

Checkers, 33
Crypto, 61
Fish, 41
Fraction Rally, 49
Hopscotch, 51
Multifacto, 73
Nimble Numbers, 67
Polygon Spin, 21
Road Race, 23
Three Guizinta, 77
Tic Tac Toe Variation, 79
Track Race, 55
Travel, 29

BIBLIOGRAPHY

Each entry in this section lists the author, title and the address of the publisher or other distributor from which the document may be obtained. Whenever a document is available on ERIC microfiche, the ED number (e.g., ED 070 121) is also listed. ERIC microfiche collections are located in the libraries of Oregon State University, Oregon College of Education, Portland State University, Southern Oregon College and the University of Oregon. The Department of Education also maintains an ERIC collection in the Resource Dissemination Center.

BIBLIOGRAPHY: RESEARCH

Allen, L. E., R. W. Allen and J. Ross. "The Virtues of Nonsimulation Games." Simulation and Games. Sage Publications: 275 South Beverly Drive, Beverly Hills, CA 90212 (September 1970).

Bettleheim, Bruno. "What Children Learn from Play." Parents' Magazine. Parents' Magazine Enterprises, Inc.: 52 Vanderbilt Ave., New York, NY 10017 (July 1964).

Coleman, James S. and others. "The Hopkins Games Program: Conclusions from Seven Years of Research." Educational Researcher. American Educational Research Association: 1126 Sixteenth St., NW, Washington, DC 20036 (August 1973).

DeVries, David L. and Keith J. Edwards. Learning Games and Student Teams: Their Effects on Classroom Processes. Center for Social Organizations of Schools: The Johns Hopkins University, Baltimore, MD 21218 (1972). ED 070 019.

Dropkin, Ruth and Arthur Tobier. Notes from Workshop Center for Open Education. Workshop Center for Open Education: Room 6 - Shepard Hall, City College, City University of New York, Convent Ave. and 140th St., New York, NY 10031 (1973). ($.75)

Entwisle, Doris R. and others. Giant Steps: A Game to Enhance Semantic Development of Verbs. Center for Social Organization of Schools: The Johns Hopkins University, Baltimore, MD 21218 (1970). ED 042 595.

Fink, Albert H. and others. The Effects of Games on Motivational Aspects of Teacher-Pupil Interaction. Final Report 20.3. Center for Innovation in Teaching the Handicapped: Indiana University, Bloomington, IN 47401 (1971). ED 069 078.

Gordon, A. L. Games for Growth. Science Research Associates: 568 University Ave., Suite G, Palo Alto, CA 94301 (1970).

Herron, Robin and Brian Sutton-Smith, eds. Child's Play. John Wiley and Sons, Inc., 605 Third Ave., New York, NY 10016 (1971). ($10.75).

Livingston, Samuel A. The Academic Games Program: Summary of Research Results (1967-1972). Center for Social Organization of Schools: The Johns Hopkins University, Baltimore, MD 21218 (1972). ED 072 393.

Olson, David R. and others. Teacher-Student Communication Games: Some Experiments on Instruction. Center for Research and Development in Teaching: Stanford University, Stanford, CA 94305 (1972).

Piaget, Jean. Play, Dreams and Imitation in Childhood. W. W. Norton and Company: 55 Fifth Ave., New York, NY 10003 (1962). ($2.25).

Shankman, F. V. "Games Reinforce Reading Skills." Reading Teacher. International Reading Association: 6 Tyre Ave., Newark, DE 19711 (December 1968).

Sutton-Smith, Brian. The Playful Modes of Knowing. Unpublished paper (1970). ED 050 806.

BIBLIOGRAPHY: RESOURCES

Adkins, Dorothy C. and others. Home Activities for Preschool Children: A Manual of Games and Activities for Use by Parents with Their Children at Home. Project Head Start, University of Hawaii, Honolulu, HI 96822 (1971). ED 060 947. Lists games to involve parents in the intellectual and emotional development of their children.

Belch, Jean, ed. Contemporary Games: Bibliography. Gale Research Company, Book Tower, Detroit, MI 48226 (1973). ($25). Lists published articles and books on gaming as an instructional technique and on individual games. Entries are categorized by subject. Available for use in the Resource Dissemination Center at the Department of Education and in the educational reference section of university libraries.

Belch, Jean, ed. Contemporary Games: Directory. Gale Research Company, Book Tower, Detroit, MI 48226 (1973). ($35). Lists and describes games by subject and grade level. Includes designers' and producers' index and ordering information. Available for use in the Resource Dissemination Center at the Department of Education and in the educational reference section of university libraries.

Greenwood, Jay. Resources for Individualizing Mathematics. Multnomah County IED, P.O. Box 16657, Portland, OR 97216 (n.d.). An annotated bibliography of resource books and materials to individualize mathematics programs. Listings are keyed to phases of development.

Henderson, George L. and Lowell D. Glumm. Let's Play Games in General Mathematics. National Textbook Company: 8259 Niles Center Rd., Skokie, IL 60076 (1972). A collection of almost two hundred games and activities for the general mathematics teacher. Levels indicated.

Hurwitz, Abraham B. and Arthur Goddard. Games to Improve Your Child's English. Simon and Schuster: 630 Fifth Ave., New York, NY 10020 (1969). ($7.50). The introduction notes the purpose of the games listed and suggests ways to use them. Concludes with a list of word games and a list of commercially available activities.

Kohl, Herbert R. Math, Writing and Games in the Open Classroom. New York Review Books: 250 West 57th St., New York, NY 10019 (1974). ($2.45). Identifies and discusses the components of games. Offers several ideas for game activities and includes practical advice for setting up a game center in the classroom.

Mason, Evelyn. Suggested Activities for Developing and Reinforcing Word Analysis Skills in the Reading Program. Unpublished paper (1968). ED 028 039. Describes procedures for teaching word analysis skills and suggests sample games and activities. Concludes with listings of commercial aids and references for the teacher.

Platts, Mary E., ed. PLUS: A Handbook of Classroom Ideas to Motivate the Teaching of Elementary Mathematics. Educational Service, Inc.: P.O. Box 219, Stevensville, MI 49127 (n.d.).

Polon, Linda and Wendy Pollitt. Creative Teaching Games. T. S. Denison and Company, Inc.: 5100 West 82nd St., Minneapolis, MN 55437 (1974). Provides practical tips for making games, focusing on multiskill games and the educational design of versatile game boards.

Rosenau, Fred and Betty Tuck. A Guide to Securing and Installing the Parent/Child Toy-Lending Library. Superintendent of Documents: U.S. Government Printing Office, Washington, DC 20402 (1972). (Stock No. 1780-0993, $.60). A how-to-do-it manual for using the readiness program developed by the Far West Regional Educational Laboratory. Includes descriptions of the toys and games used in the program and suggests ways to make some toys.

Schuh, Fred. The Master Book of Mathematical Puzzles and Recreations. Dover Publications: 180 Varick St., New York, NY 10014 (1969). ($3.50). Catalogues mathematical activities for all aspects of mathematics, and includes detailed analyses of even simple games.

Smith, Seaton E., Jr. and Carl A. Backman, eds. Teacher-made Aids for Elementary School Mathematics. National Council of Teachers of Mathematics, Inc.: 1906 Association Dr., Reston, VA 22091 (1974). A collection of published articles from the Arithmetic Teacher. The articles suggest a number of activities and games and are arranged topically.

Spache, Evelyn B. Reading Activities for Child Development. Allyn and Bacon, Inc.: Boston, MA 02210 (1972). ($3.95). Includes both games and activities which are keyed to specific reading skills. The chapter introductions explain why each group activity is necessary and what the child should be able to do after completing the activities.

Van Scoy, Karen and Robert Whitehead. Literature Games. Fearon Publishers: 6 Davis Dr., Belmont, CA 94002 (1971). ($1.50). Classified by instructional levels, the games in this book are designed to supplement the enrichment and recreational reading program.

Weatherly, Michael. Handbo[illegible] the Role of Games in Teaching Speech Communication. Department of Communication Arts, University of Dayton: 300 College Park Ave., Dayton, OH 45409 (1972). ED 070 126. Contains sections on how to choose games as well as information on research on the effectiveness of games. Bibliography and sources included.

Westinghouse Learning Corporation. Learning Directory. Westinghouse Learning Corporation: 100 Park Ave., New York, NY 10017 (1971). ($130). Lists instructional materials in a variety of media. The section on games includes books, filmstrips, cards, kits and films. Games are also listed topically. Available for use in the Resource Dissemination Center at the Department of Education, or in the Education Library at Portland State University.

[The following publications carry articles and helpful suggestions on games in almost every issue: Arithmetic Teacher, Instructor, Learning, and Math Enthusiast. For example see:]

Chandler, Arnold M. "Things You Can Try" in Arithmetic Teacher. National Council of Teachers of Mathematics: 1906 Association Dr., Reston, VA 22091 (January 1974).

Edwards, M. "Selecting Classroom Games" in Instructor. Instructor Publications, Inc.: 7 Bank St., Dansville, NY 14437 (August 1973).

Immerzeel, George and Don Wiederanders. "Ideas" in Arithmetic Teacher. National Council of Teachers of Mathematics: 1906 Association Dr., Reston, VA 22091 (February 1974).

Sten, L. S. "Dewey Baseball: Game" in Instructor. Instructor Publications, Inc.: 7 Bank St., Dansville, NY 14437 (May 1974).

Wiley, Hazel. "Guess and See" in Math Enthusiast. Oregon Council of Teachers of Mathematics: Judy Johnson, Editor, Westmoreland School, 2285 West 18th Ave., Eugene, OR 97402 (May 1974).

"Swap Shop" in Learning. Education Today Company, Inc.: 530 University Ave., Palo Alto, CA 94301 (March 1974).

TITLE INDEX

Addition Concentration, 59
Big Egg Game, 13
Checkers, 33
Compound Bingo, 35
Crypto, 61
Equivalent Rummy, 63
Find the Diamond Mine, 15
Fish, 41
Fraction Rally, 49
Geometry Bingo, 71
Hop the Rocks to the Monster's Pond, 17
Hopscotch, 51
L and M Game, 53
Lady Bug, 19
Make a Million, 83
Math Families, 65
Multifacto, 73
Nimble Numbers, 67
On and Off, 75
Play in the Hay, 37
Poison, 85
Polygon Spin, 21
Road Race, 23
Sign Game, 25
Soundo, 27
Spineroo, 87
Three Guizinta, 77
Tic Tac Toe Variation, 79
Track Race, 55
Travel, 29
Word Concentration, 43

KEY-WORD INDEX

addition, 51, 55, 59, 61, 65, 67, 75, 77, 85, 87
antonyms, 43
compound words, 35
consonants, 19, 23, 33
division, 55, 61, 67, 73
fractions, 49
geometric shapes, 21, 71
measurement, 53
multiplication, 51, 61, 67, 73, 77, 79
place value, 83
shapes, 21, 25, 71
spelling, 29, 41
subtraction, 61, 65, 67, 75
synonyms, 43
vowels, 13, 15, 17, 19, 23, 27, 33, 37